Islam

The Fount of Modern Civilisation

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Compiler's Note

To the Muslim Youths

The compiler has the privilege to address you that way for as he scribbles these lines, he is in his advanced eighties, may be you have the fortune of going through these papers once he has passed away. It is basically meant for you, the Muslim Youth.

Let you know at the outset that the compiler is not a writer or preacher, by talent, profession, or otherwise he has no intentions either to pretend to be one. A soldier with the patient manner and outlook, his own ways of straight, simple and blunt, but a sincere expression, true and faithful narration of what he has seen, how he feels and thinks. Therefore do not disappoint yourself by trying to seek here, in vain academics or literacy.

He shall be satisfied and take his efforts amply rewarded if the facts discovered, gathered together and narrated herein, provoke and re-direct your thoughts, if they pose a challenge and arouse in you, the great inherent potentialities lying latent and dormant, if they warm your blood and stir up your soul and if they, be it for a moment, shake you up from the long deep slumber to stand and vie with your worthy ancestors in achieving the main task of leading mankind.

To bring the modern educated Muslims nearer to Qur-anic code of life by straightening the curves that have appeared in their mental make up as a result of their Western-oriented education and steering the spirit of faith that lies buried in their hearts. To explain and interpret the Qur-anic Sciences teaching in a manner and language that conform, with the modern intellectual scientific standard and shatter the magic spell of modern civilisation.

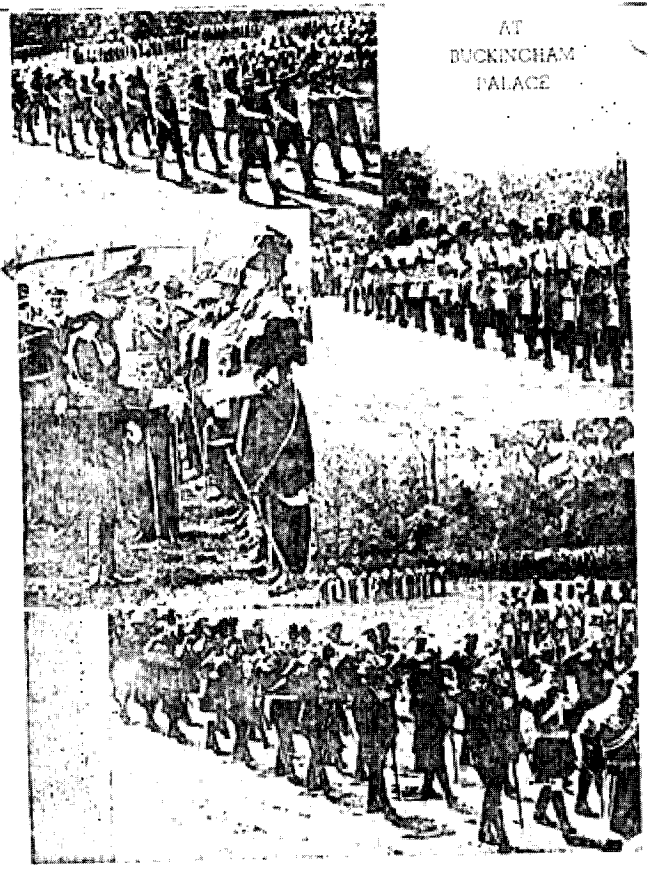
Western colonialism provides literary and intellectual ammunition for the European and empire builders of the West, they took great pains in studying diligently our character, history, customs, languages and they, by their jugglery of words, distorted the ideas and movements which fall against the interests of the Western imperialists. They create and sustain intellectual atmosphere in which the pinch of exploitation may not be felt by the subject races of the Europeans. Thus Muslims, willingly, became the tools of their own degradation. They sincerely felt obliged to this modern civilisation, to its progress and happiness, and were so infiltrated by it, that they emigrated its note and manners even of the freedom.

As is usual in such [illegible] eminent scholars [illegible] holy books of Muslims the holy Qur'an [illegible] and traditional attitude of condemnation [illegible] writings of scholars of this [illegible] that while the general type of adverse comments is well known, the other kind is much less known.

The compiler, essentially [illegible] preacher not a politician, but merely a graduate [illegible] in the British Army Scale. Served as Royal Escort to the King Emperor at the Buckingham Palace during 1936-37, staying in Hampton Court Palace, London. During this period had an access to a mine of researched [illegible] Greek, Egyptian, Roman, Byzantine and [illegible] during the nineteenth century.

These researches disclosed historical [illegible] falsely presented to the world. [illegible] Qur'an was assiduously studied, preached and [illegible] practical application in Europe by the emperors, warriors, kings, priests, scholars and [illegible] their head and crown. The most conspicuous [illegible] appreciated by the cultural excellence and elegance of Qur'an and its language.

Capt. M Kareem Siddiqi



With the Emperor at the Buckingham Palace

E 5

Captain Kareem Siddiqi

D 4

The Compiler – Captain Kareem Siddiqi

Captain Kareem with the Royal family
Buckingham Palace London

F6

European Attitude

Europe tries to hide its Obligations to the Muslims

It is a pity that we know these centuries (770-1150 A.D.) of Arabic efflorescence so imperfectly. Thousand of Arabic manuscripts in science, literature and philosophy lie hidden in the libraries of the Moslem world: in Constantinople alone, there are thirty Mosque Libraries, whose wealth has been merely scratched; in Cairo, Damascus, Mosul, Baghdad, Delhi are great collections not even catalogued; an immense library in the Escarole near Madrid has hardly completed the listing of its Islamic manuscripts in science, literature, jurisprudence, and philosophy. What we know of Muslim thought in those centuries is a fragment of what survives, what survives is a fragment of what was produced; what appears in these pages is a morsel of a fraction of a fragment. When scholarship has surveyed more thoroughly this half-forgotten legacy, we shall probably rank the tenth century in Eastern Islam as one of the golden ages in the history of mankind.

I have to deplore the systematic manner in which the literature of Europe has contrived to put out of sight our scientific obligations to the Mohammedans. Surely they cannot be concealed much longer and national conceit cannot be perpetuated forever. What should the modern astronomer say when, remembering the contemporary barbarism of Europe, he finds the Arab Abul Hassan making tubes, to the extremities of which ocular and object depictor sights were attached, as used at Meragha? What, when he reads of the attempts of Abderrahman Sufi at improving the photometry of the stars? What about the astronomical tables of Ibn-e Junis (A.D. 1008), called the Hakemite tables, or the Ilkanic tables of Nasser Eddin Toosi, constructed at the great observatory just mentioned, Meragha, near Tauris, (A.D. 1259), or the measurement of time by pendulum oscillations, and the methods of correcting astronomical tables by systematic observations? Are such things worthless indications of the mental state? The Arab has left his intellectual impress on Europe, as before long, Christendom will have to confess; he has indelibly written it on the heavens, as any one would see who reads the names of the scientists on a common celestial globe.

The influence of Christianity on Islam was almost limited to religion and war. Probably from Christian exemplars came Mohammedan mysticism, monasticism, and the worship of the saints. The figure and story of Jesus touched the Moslem soul, and appeared sympathetically in Moslem poetry and art.

The influence of Islam on Christianity was varied and immense. From Islam, Christian Europe received foods, drinks, drugs, medicaments, armor, heraldry, art motives and tastes, industrial and commercial articles and techniques, maritime codes and ways, and often the words for these things – orange, lemon, sugar, syrup, sherbet, julep, elixir, jar, azure, arabesques, mattress, sofa, muslin, satin, fustian, bazaar, caravan, check, tariff, traffic, douane, magazine, risk, sloop, barge, cable, admiral. The game of chess came to Europe from India via Islam, and picked up Persian terms on the way; check-mate is from the Persian shah-mat (the king is dead). Moslem science preserved and developed Greek mathematics, physics, chemistry, astronomy, and medicine, and transmitted it considerably enriched, to Europe; and Arabic scientific terms – algebra, zero, cipher, azimuth, alembic, zenith, almanac – still lie imbedded in European speech. Moslem medicine led the world for half a millennium.

A History of the Intellectual Development of Europe
New York – 1875

Muslims were described as worshipping status of Muhammad (SAW), that Koran is against peace, is anti progress and science etc. These writers had a set mind with an ignoble purpose to show that Islam was inferior to Christianity. All have tried to present a garbled, twisted, distorted, perverted and untrue picture of Islam and its Holy Prophet (SAW). This false bogey raised by this mischievous propaganda is now being exposed by many non-Muslim writers who have studied Islam and Koran.

Prof. Will Durant

Never to this day Europe acknowledged in an honest and wholehearted manner, the great debt she owes to the Arabic culture and civilisation.

Maj. A Clyn Leonard

The Holy Prophet ﷺ

Never did man propose to himself, voluntarily or otherwise, an end more sublime since this end was superhuman; to sap the superstitions interposed between the creature and the Creator, to bring back God to man and man unto God, to restore the rational and holy idea of the Divinity amid that chaos of the material and disfigured deities of idolatry.

Never did man undertake, with resources so feeble, a task so disproportioned to human forces, since he had, in the conception as well as in the execution of so vast a project, no other instrument than himself, and no other auxiliaries except a handful of barbarians living in a corner of a desert.

Never, in fine, did man accomplish in less of time so immense and so durable a revolution in the world; since, in less than two centuries after his preaching Islamism, preached and armed, reigned over the three Arabias, conquered to the unity of the Godhead, Persia, Khorassan, Transoxiana, Western India, Syria, Egypt, Ethiopia, all the known continent of Northern Africa, several islands of the Mediterranean, Spain and a part of Gaul.

If the grandeur of the design, the pettiness of the means, the immensity of the results, be the three measures of human genius, who would dare to compare humanly the greatest men of modern times to Mahomet? The most famous of them have agitated but armies, laws, empires; they have founded (when they founded anything) but material potencies, often crumbled to the earth, before themselves. Mahomet has recast armies, legislations, empires, peoples, dynasties, with millions of men throughout one third of the inhabited globe. More than that, he recast altars, gods, religions, ideas, creeds, souls. He has founded upon a *Book*, of which every letter is become a law, a spiritual nationality, which embraces peoples of every tongue and race, and he has stamped as the indefinable character of the Mussalman nationality, the hatred of false gods and the passion of the one and true God. This patriotism, avengeful of the profanation of havens was the true virtue of the children of Mahomet, the conquest of one-third of the world to his doctrine was his miracle; or rather, it was not the miracle of man, but that of reason. The idea of the Unity of God, proclaimed in the lassitude of fabulous theogonies, had in itself such virtue, that in exploding upon his lips, it fired the temples of old idolatry, and kindled with their flames one-third of the globe.

But his life, his meditations, his heroic blasphemies against the superstitions of his country, his daring in affronting the fury of the idolaters, his constancy in enduring it for thirteen years at Mecca, his acceptance of the part of laughing-stock and almost victim among his fellow country-men, flight; in fine, his ceaseless preaching, his precarious wars, his confidence of success and his super human fortitude in reverses, his longanimity in victory, his ambition all of idea and none of empire, his prayers without end, his mystic converse with God, his death and his triumph after death, attest more than an imposture - a conviction. It was this conviction which gave him power to restore a dogma. This dogma was two fold, the unity of God and the immateriality of God, - the one saying what is God, the other saying what He is not; the one subverting with the sabres the divinities of falsehood, the other inaugurating with the word an idea.

Philosopher, orator, apostle, lawgiver, warrior, conqueror of ideas, restorer of rational dogmas of a worship without images, founder of twenty territorial empires, and of one spiritual empire – such was Mahomet!

What man was greater, by all the scales on which we measure human greatness?

There is no greater except him who, in proclaiming earlier the same dogma, had promulgated at the same time a purer morality; who did not draw the sword in aid of the word, that sole weapon of the mind; who gave up his own blood instead of spilling that of his brethren; and who was a martyr instead of being a conqueror. But this latter personage, men, accordingly, have judged to be too great to be submitted to the common measure of humanity; and if his human nature and his doctrine have made him a prophet even among skeptics, his virtue and his sacrifice have made him a god.

History of Turkey
New York - 1855

Four years after the death of Justinian, A.D. 569, was born at Mecca, in Arabia, the man who, of all men, has exercised the greatest influence upon the human race, - Mohammed! He raised his people from fetishism and basest idol worship; he preached a monotheism which quickly scattered to the winds, the empty disputes of the Arians and Catholics, and irrevocably wrenched from Christianity more than half, and that by far the best half of her possessions, since it included the Holy Land, the birth place of our faith, and Africa, which had imparted to it its Latin form. That continent, and a

very large part of Asia, after the lapse of more than a thousand years, still remains permanently attached to the Arabian doctrine.

Mohammed had possessed that combination of qualities, which more than once has decided the fate of empires. A preaching soldier, he was eloquent in the pulpit, valiant in the field. His theology was simple: "There is but one God and Mohammed is His Prophet." The effeminate Syrian, lost in Monothelite and Monophysite mysteries; the Athanasian and Arian, destined to disappear before his breath, might readily anticipate what he meant. Asserting that ever-lasting truth, he did not engage in vain metaphysics, but applied himself to improving the social condition of his people by regulations respecting personal cleanliness, sobriety, fasting and prayers. Above all other works, he esteemed almsgiving and charity. With a liberality to which the world had of late become a stranger, he admitted the salvation of men of any form of faith provided they were virtuous. Whosoever desires to know whether the event of things answered to the boldness of such an announcement, will do well to examine a map of the world in our times. He will find the marks of something more than an imposture. To be the religious head of many empires, to guide the daily life of one-third of the human race, may perhaps justify the title of a Messenger of God!

A History of the Intellectual Development of Europe
New York - 1875

I have always held the religion of Muhammad (peace be upon him) in the high estimation because of its wonderful vitality. It is the only religion, which appears to me to possess that assimilating capability to the changing phase of existence, which can make itself appeal to every age. The world must doubtless attach high value to the predictions of great men like me. I have prophesied about the faith of Muhammad-SAW that it would be acceptable to the Europe of tomorrow as it is beginning to be acceptable to the Europe of today. The medieval ecclesiastics, either through ignorance or bigotry, painted Muhammadanism in the darkest colours. They were in fact trained both to hate the man Muhammad-SAW and his religion. To them Muhammad-SAW was Anti-Christ. I have studied him – the wonderful man, and in my opinion far from being an Anti-Christ, he must be called the Saviour of Humanity. I believe that if a man like him were to assume the dictatorship of the world, he would succeed in solving its problems in a way that would bring it the much-needed happiness. But to proceed, it was in the 19th century that honest thinkers like Carlyle, Goethe and Gibbon perceived intrinsic

worth in the religion of Muhammad[SAW], and thus there was some change for the better in the European attitude towards Islam But the Europe of the present century is far advanced. It is beginning to be enamoured by the creed of Muhammad [SAW].

Bernard Shaw
Genuine Islam
Singapore - 1936

Call him (Muhammad[SAW]) the greatest of all reformers, because he[SAW] brought about a revolution, example of which never existed either before or after him. He[SAW] is the most successful of all Prophets and religious personalities. Whatever he had said he could do, his disciples would straightaway see him do. They could not help attributing to him miraculous acts which he always denied he could do. What more crowning proof of his sincerity is needed? Muhammad (peace be upon him) to the end of his life claimed for himself the title only with which he had begun, and which the highest philosophy and the truest Christianity will one day, I venture to believe, agree in yielding to him, that of a Prophet, the very Prophet of God. Head of the state as well as the Church, he was Caesar and Pope in one; but he was Pope without Pope's pretensions, Caesar without the legions of Caesar. Without a standing army, without a bodyguard, without a palace, without a fixed revenue, if ever any man had the right to say that he ruled by the right divine, it was Muhammad (peace be upon him). He rose superior to the titles and ceremonies, the solemn stifling, and the proud humility of the court etiquette, and those the foremost in the files of time - a Caesar, a Cromwell, a Napoleon had been unable to resist their tinsel attraction. Muhammad (peace be upon him) was content with the reality, he cared not for the dressing of power. The simplicity of his private life was in keeping with his public life. "God", says al-Bukhari, "Offered him the keys of the treasures of the earth, but he would not accept them." On the whole, the wonder is to me not how much but how little under different circumstances Muhammad (peace be upon him) differed from himself. In the shepherd of the desert, in the Syrian trader, in the solitary of Mount Hira, in the reformer, in the minority of one, in the exile of Madinah, in the acknowledged conqueror, in the equal of the Persian Chosroes, and the Greek Heraclius, we can still trace a substantial unity. I doubt whether any other man whose external conditions change so much, ever himself changed less to meet them: the accidents are changed, the essence seems to me to be the same. Illiterate himself, scarcely able to read or write, he was yet the author of the book which is a poem, a code of laws, a book of prayer and Bible in one, and is rever-

enced to this day by a sixth of the whole human race, as the miracle of purity of style, of wisdom, and of truth. It was but one miracle claimed by Muhammad (peace be upon him) - his standing miracle he called it; and a miracle indeed it is!

Bosworth Smith
Mohammed and Mohammedanism
London - 1889

A false man found a religion? Why a false man cannot build a brick house? But of a great man, especially of him (Muhammad), I will venture to assert that it is incredible, he should have been other than true. Ah, No! This deep-hearted son of the wilderness with his beaming black eyes and open deep social soul had other thoughts than ambition. A silent great man; he was one of those who cannot but be in earnest; whom Nature herself has appointed to be sincere.

Carlyle
Genuine Islam
Singapore - 1938

He lived with his wives in a row of humble cottages separated from one another by palm branches, cemented together with mud. He would kindle the fire, sweep the floor, and milk the goats himself. The little food he had was always shared with those who dropped in to partake of it. He was the Messenger of the One God, and never to his life's end did he forget who he was or the Message, which was the marrow of his being. He brought his tiding to his people with a grand dignity sprung from the consciousness of his high office together with a most sweet humility, whose roots lay in the knowledge of his own weakness.

Lane Poole
Genuine Islam
Singapore - 1938

With all that simplicity which is so natural to a great mind, he performed the humbler offices whose homeliness it would be idle to conceal with pompous diction; even while Lord of Arabia, he mended his own shoes and coarse woollen garments, milked his ewes, swept the hearth, and kindled the fire. Dates and water were his usual fare and milk and honey his luxury. When he travelled, he divided his morsel with his ser-

vant. The sincerity of his exhortation to benevolence was justified at his death by the exhausted state of his coffers.

Davenport
Genuine Islam
Singapore-1938

It is foolish, that everyone in this case praises his special opinion,
If Islam means submission to God,
In Islam we all live and die.

I cannot say anything more than this, that here also I seek to hold onto Islam that is leave it to God - Islam which we all, however, sooner or later have to confess. It fortifies the faith in the conviction, that nothing can happen to men what an all-Wise God has not already destined and in this way prepares them for all life with courage and cheerfulness. Only by means of the conception of One God, he (Muhammad -peace be upon him) has overpowered the whole world.

Goethe
1827

Voltaire, who at the beginning was one of Islam's most obdurate opponents and poured scorn on the Prophet, after his 40 years of study of religion, philosophy, frankly admitted: "Muhammad's religion was unquestionably superior to that of Jesus. He never descended to the wild blasphemies of Christians, nor said that one God was three or three Gods were one. The single pillar of his faith is the one God. Islam owes its being to its founder's decrees and manliness; whereas Christians used the sword to force their religion on others. Oh Lord if only all nations of Europe would make the Muslims their models".

One of Voltaire's heroes was Martin Luther, yet he wrote, "Luther was not worthy to unloose the latchets of Muhammad's (peace be upon him) shoes. Muhammad was a great man and a trainer of great men by his example of virtue and perfection. A wise lawgiver, a just ruler, an ascetic prophet, he raised the greatest revolution earth has seen".

The Qur-an

Arabian influence thus imposing itself on Africa, France and Europe by military successes and threatening over Constantinople, rested essentially on our intellectual basis, the value of which it is needful for us to consider. The Koran, which is that basis, has exercised a great control over the destinies of mankind, and still serves as a rule of life to a very large portion of our race. Considering the asserted origin of this Book - indirectly from God Himself - we might justly expect that it would bear to be tried by any standard that man can apply and vindicate its truth and excellence in the ordeal of human criticism. In our estimate of it, we must constantly bear in mind that it does not profess to be successive revelations made at intervals of ages and on various occasions, but a complete production delivered to one man. We ought therefore to look for universality, completeness, perfection. We might expect that it would present us with just views of the nature and position of this world in which we live, and that whether dealing with the spiritual and material, it would put to shame the most celebrated productions of human genius, as the magnificent mechanism of the heavens and the beautiful living forms of the earth are superior to the vain contrivances of man. Far in advance of all that has been written by the sages of India or the philosophers of Greece, on points connected with the origin, nature and destiny of the universe, its dignity of conception and excellence of expression should be in harmony with the greatness of the subject with which it is concerned.

We might expect that it should propound with authority, and definitively settle those all-important problems which have exercised the mental powers of the ablest men of Asia and Europe for so many centuries and which are at the foundation of all faith and all philosophy; that it should distinctly tells us in unmistakable language, what is God, what is the world, what is soul, and whether man has any criterion of truth; that it should explain to us how evil can exist in a world, the Maker of which is Omnipotent and altogether Good; that it should reveal to us in what the affairs of man are fixed by Destiny and in what by free-will; that it should teach us whence we came, what is the object of our continuing here, what is to become of us hereafter? And, since a written book claiming a divine origin must necessarily accredit itself even to those most reluctant to receive it, its internal evidence becoming stronger and not weaker with the strictness of the examination to which they are submitted, it ought to deal with those things that may be demonstrated by the increasing knowledge and genius of man anticipating therein his conclusions. Such a noble work as may be its origin, must not re-

fuse but court the test of natural philosophy, regarding it not as an antagonist but as its best support. As years pass on and human science becomes more exact and more comprehensive, its conclusion must be found in union there-with. When occasion arises, it should furnish us at least the foreshadowing of the great truths discovered by astronomy and geology, not offering for them the wild fictions of early ages, inventions of the infancy of man. It should tell us how sun and worlds are distributed in infinite space, and how, in their successions they came forth in limitless time. It should say, how far the dominion of God is carried out by law and what is the point at which it is His pleasure to resort to His own good providence or His arbitrary will. How grand the description of this magnificent universe written by the Omnipotent Hand! Of man, it should set forth his relations to other living beings, his place among these, his privileges and responsibilities. It should not leave him to grope his way through the vestiges of Greek Philosophy, and to miss the truth at last; but it should teach him wherein true knowledge consists, anticipating the physical science, physical power and physical well-being of our own times, nay, even unfolding for our benefit, things that we are still ignorant of. The discussion of subjects so many and so high, is not outside the scope of a work of such pretensions. Its manner of dealing with them is the only criterion it can offer, of its authenticity to the succeeding times.

An impartial reader of the Koran may undoubtedly be surprised that a feeble production like this should serve its purpose so well. The Koran abounds in excellent moral suggestions and precepts. Its composition is so fragmentary that we cannot turn to a single page without finding maxims of which all men must approve. This fragmentary construction yields texts, and motto and rules complete in themselves, suitable for common men in any of the incidents of life. There is a perpetual insisting on the necessity of prayer, an inculcation of mercy, almsgiving, justice, fasting, pilgrimage, and other good works; institutions respecting conduct, both social and domestic, debts, witnesses, marriage, children, wine and the like; above all, a constant stimulation to do battle with the infidel and blasphemer. For life as it passes, in Asia, there is hardly a condition in which passages from the Koran cannot be recalled, suitable for instruction, admonition, consolation, encouragement. Such devotional fragments are of far more use than any sustained theological doctrine.

In what we have thus said, respecting a work held by so many millions of men as a revelation from God, we have endeavoured to speak with respect and yet with freedom, constantly bearing in mind how deeply to this book, Asia and Africa are indebted

for daily guidance, how deeply Europe and America for the light of science. Of the literary excellence of this work, it is scarcely possible to judge fairly from a translation. The unapproachable excellence of this work is almost universally sustained.

A History of the Intellectual Development of Europe
New York – 1875

Until the last century, there did not exist anything approaching any correct knowledge of the culture and history of Koran. The accounts of Muhammad[SAW] and Koran, which were published in Europe before the beginning of the 19th century, are not to be regarded except as literary curiosities. At the present day when wider and more exact knowledge has become accessible, specially any history of the middle ages give Islamic culture more than off hand and patronising recognition. It is but for Koran that modern European civilisation would not have risen at all. It is absolutely certain that but for Koran it would not have assumed that direction which has enabled Europe to transcend all previous phases of evolution.

The Making of Humanity
Dr. Robert Briffault
London – 1929

It has created an all but new phase of human thought and a fresh type of character. It first transformed a number of heterogeneous desert tribes of the Arabian peninsula into a nation of Heroes and Ben proceeded to create the vast politico-religious organizations of the Muhammadans world which are one of the greatest forces with which Europe and the East have to reckon today. There is, all over, apart from its religious value, a more general view from which the book should be considered. The Qur-an enjoys the distinction of having been the starting point of a new literary and philosophical movement, which has powerfully affected the finest and most cultivated minds among both Jews and Christians in the Middle Ages. This general progress of the Muhammadan world somehow has been arrested, but the research has shown that what European scholars knew of Greek philosophy, or mathematics, astronomy, and like Sciences for several centuries before the Renaissance, was, roughly speaking, all derived from Latin treatise ultimately based on Arabic originals; and it was the Qur-an which, though indirectly, gave the first impetus to these studies among the Arabs and their allies. Linguistic investigation, poetry, and other branches of literature, also made

their appearance soon after or simultaneously with the publication of the Qur-an; and the literary movement thus initiated had resulted in some of the fineness products of genius and learning.

Rev. A. W. Rodwell
Introduction-1940

The language of the Qur-an is universally acknowledged to be the most perfect form of Arabic speech. The language is noble and forcible. The Muhammad's hears it must have been startling from the manner it brought great truths home to them in the language of their every day life. It is often difficult to enter thoroughly into the spirit of the old Arab poets, Muhammad's contemporaries or immediate predecessor. With the Qur-an it is not so. Muhammad (peace be upon him) speaks with a living voice, his vivid word-painting brings at once before the mind, the scene he describes. To translate this would be is a most difficult job.

Palmer
Genuine Islam
Singapore-1958

Despite Westerners' small acquaintance with Islam, and their often mistaken ideas, far removed from reality, a comparatively large number of their thinkers grasp some of the depth and profundity of Islamic teaching and do not conceal their admiration for its clear exegesis and estimable doctrines.

A Muslim scientist's respect for Islam's laws and ordinances is no surprise. But if a non-Muslim savant, despite his slavery to his own religious bigotry, yet recognises Islam's grandeur and greatness and its lofty leading, that is a real tribute, especially when it is based on recognition of the progressive nature of Islam's legal systems and their legacy to mankind. This is why this book quotes foreign verdicts on Islam. We do so, not because we need their support, but because they can help to open the road for seekers and enquirers, so that any that reads may run its way.

Before appearance of Koran, science and technology were considered secret or privileged to belong to particular groups of people, not to be disclosed or disseminated. The knowledge of the Greek, Chinese, and Indians was strictly localised. It was a sin to spread it out side. The famous philosopher like Plato the great, once rebuked his disci-

ple Aristotle on having made his knowledge easy to be understood by commoners. First in the world was the Koran that commanded its followers to spread knowledge throughout the world. Koran considers knowledge as something sacred thus it is institutionally inseparable from Islamic organisation. Education has always been at the heart of Koranic civilisation as one of its base pillars.

The international and cosmopolitan nature of Koranic civilisation derived from the universal character of the Islamic revolution and reflected in the geographic spread of the Islamic world, enable it to create the first science of truly international character in human society. Consciousness of a supreme **ALLAH** is ingrained in the nature of men. This consciousness goes back to the most primitive civilisation. This is embedded in the natural imagination and institutional emotions of man.

Cambridge University on Koran

If it is not poetry, and it is hard to say whether it be or not-it is more than poetry. It is not history, nor biography. It is not anthology like the Sermon on the Mount, not metaphysical dialectics like the Buddhist sutras; nor sublime homiletics like Plato's Conference of wise and foolish teachers. It is Prophet's cry Semitic to the core yet of a meaning so Universal and so timely that all the voices of the age take it up willing or unwilling and it echoes over palaces and deserts, over cities and empires, first kindling its chosen hearts to world's conquest, then gathering itself into a reconstructive force that all the creative light of Greece and Asia might penetrate the heavy gloom of Christian Europe when Christianity was but the queen of night.

Johnson
Genuine Islam
Singapore - 1939

A book by the aid of which the Arabs conquered a world greater than that of Alexander the Great, greater than that of Rome and in as many tens of years as the latter had wanted hundreds to accomplish her conquest; by the aid of which they alone of all the Semites came to Europe as kings whither the Phoenicians had come as tradesmen and the Jews as a fugitive or captive,-came to Europe to hold up together with these fugitives the light to humanity: they alone while darkness lay around to raise the wisdom and knowledge of Hellas from the dead, to teach philosophy, medicine, astronomy and

the Golden art of song to the East as to the West, to stand at the cradle of modern science and to cause us late epigoni for ever to weep for the day when Grenada fell.

Emmanuel Deutsche
Genuine Islam
Singapore - 1939

Koran gives that backbone of character, that firmness, determination and strength of will and also that uncomplaining patience and submission, in the presence of the bitterest misfortune which characterises and adorns the best adherent of the creed. Koranic beliefs are founded and based solely on reason. So, priority of reason in Islam is apparent. To command what is right and forbid what is wrong is article of faith of Koran.

Beliefs and Practices
Dr. Sir A. S. Tritton
Hutchinson University – 1951

It is significant of modern scientific world that many cobwebs of past propedicas, wrong notions, mist of biases and distortions are disappearing as Koran is being discovered in its true character and reality.

Professor Michael Baker
Harvard University – 1958

'Sincerely' in all senses, seems to me the merit of Koran. This same 'Sincerity' - this ardour and earnestness in the search for truth, this never-flagging perseverance in trying to impress it, when partly found again and again upon its unwilling hearers, to me as the real and undeniable seal of prophecy in Muhammad[-SAW]. The language of Koran adopts itself to the exegesis of every day life. When this every day life in its private and public bearings, is to be brought into harmony with the fundamental principles of the new dispensation - here, therefore, the merit of Koran, as a literary production should not be measured by some pre-conceived maxim of subjective and aesthetic taste, but by the effects which is produced in its followers. Koran spoke so powerfully and convincingly to the hearts of its hearers as to weld hitherto centrifugal and antagonistic elements into one compact and well organised body, animated by ideas, far be-

yond those which had until then ruled the Arabian mind. Its eloquence was perfect because Koran created a civilised nation out of savage tribes and shot a fresh woof into old warp of history.

Carlyle

But the fine idiom of their forefathers as deposited in the Koran, remained the language of their pious meditation of their prayers and thus lived on with them as a bond of unity and object of national love and admiration and a source of scientific and literary development for all the times.

In the Koran we come across jewels and treasures of knowledge and insight which are superior to the products of our most brilliant geniuses, profound philosophers and powerful politicians. How can such a book be the product of the brain of a single man and that of a man whose life was spent in commercial, not particularly religious circles, far removed from all schools of learning? He himself always insisted that he was in himself an ordinary simple man like other men, unable, without the help of the Almighty, to produce the miracle of such work. None other than He, whose knowledge compasses all that is in heaven and earth could produce the Koran.

Dr. Laura Vacciea Valerie
Naples University

Though the youngest of the epoch-making books, the Koran is the most widely read book ever written, for besides its use in worship, it is the text-book from which practically every Moslem learns to read Arabic. Other than the official translation into Turkish no authorized Moslem translation into a foreign language exists; but there are unauthorized interlinear free translations by Moslems into several languages, including Persian, Bengali, Urdu, Marathi, Japanese and Chinese. In all, the Koran has been done into some forty languages. The words (77,934), the verses (6236) and even the letters (323,621) have been painstakingly counted. This unbounded reverence for The Book reached its climax in the dogma that it is 'the Uncreated Word' of God, "Let none touch it but the purified." In our own day the sight of a Moslem picking up a piece of paper from the street and tucking it carefully into a hole in a wall - lest the name of Allah be on it - is not rare.

The word Qur-an itself means recitation, lecture, discourse. This book, a strong, living voice, is meant for oral recitation and should be heard in the original to be appreciated. No small measure of its force lies in its rhyme and rhetoric and in the cadence and sweep, which cannot be reproduced in translation without loss. Its length is four-fifths of that of the Arabic New Testament. The religious influence it exercises as the basis of Islam and the final authority in matters spiritual and ethical, is only one side of the story. Theology, jurisprudence and science being considered by Moslems as different aspects of one and the same thing, the Koran becomes the scientific manual, the text-book, for acquiring a liberal education. In such a school as al-Azhar, the largest Moslem university in the world, this book still holds its own as the basis of the whole curriculum. Its literary influence may be appreciated when we realize that it was due to it alone that the various dialects of the Arabic-speaking peoples have not fallen apart into distinct languages, as have the Romance languages.

History of the Arabs
Philip K. Hitti

The Arabic Language

Arabic is the Greek of the Semitic and it was a fortunate thing for Islam that its message was delivered at a time when Arabic was potentially at its Zenith. Aramaic was a poverty-stricken tongue compared with Arabic, and not even classical Hebrew at its best could rival Arabic in its astonishing elasticity. From its own inner resources it could evolve by autogenous process the *mot juste* which new arts and new sciences demanded for their intellectual expression. Compound words to express complex ideas are practically unknown in Arabic. Consequently, it is more interesting and remarkable that a language, which is so circumscribed, should be able to cope with all the lore of the Greek world and so seldom give rise to suspicion that any strain is being put upon its resources.

Arabic is fitted to express relations with more conciseness than the Aryan languages because of the extra-ordinary flexibility of the verb and noun. Thus, the ideas: break, shatter, try to break, cause to break, allow to be broken, break one another, ask some one to break, pretend to break, are among many variation of the fundamental verbal themes which can, or could be, expressed by vowel changes and consonantal augments without the aid of the supplementary verbs and pro-nouns which we have to employ in English. The noun too has an appropriate form for many diverse things such as the time and place of an action bodily defects, diseases, instruments, colours, trades and so on. One example must suffice. Let us take the root D-W-R, which in its simplest form means to turn or revolve (intransitive),

Dawwara: to turn a thing round

'Adara: to make go round, and so, to control

Dawr: turning (noun)

Dawaran: circulation

Dawwar: pedlar or vagrant

Dawara: to walk about with some one

Tadawwara: to be round in shape

Istadara:

Dawrah: one turning

Duwar: vertigo

Dawwarah: mariner's compass

affinity with Hebrew. In the third century Hijri, Jews had imitated the Arabs, and submitted their language to grammatical analysis. The grammar of Rabbi David Qimhi (1235 A.D.), which exercised a profound influence on the subsequent study of Hebrew among Christians, borrows a great deal from Arabic sources.

Since the beginning of 19th Century there has been constant recourse to Arabic for the explanation of rare words and forms in Hebrew: for Arabic, though more than a thousand years the junior as a literary language, is the senior philologically by countless centuries. Perplexing phenomena in Hebrew can often be explained as solitary and archaic survivals of forms, which are frequent and common in the cognate Arabic. Words and idioms, whose precise sense had been lost in Jewish tradition, receive a ready and convincing explanation from the same source. Indeed no serious student of Old Testament can afford to dispense with a first-hand knowledge of Arabic. The pages of any critical commentaries on the Old Testament will illustrate the debt that biblical exegesis owes to Arabic.

The Arabic Language more over is precise and recalls somewhat the style of Voltaire in French. Arabic is more suitable for an exact and precise science than for eloquence and poetic flights. It has the further advantage of lending itself readily to the formation of technical terms. Despite the diversity of its origin, Koranic civilisation was more a mechanical just-a-position of previous cultures, but rather a new creation in which all these elements were fused into a new and original civilisation. On the one hand, the fast history of Arabic language and Arabic institutions display their extra-ordinary vitality despite attacks from within and from without.

Arabic words in Spanish and Portuguese

Nothing in Spain gives clearer evidence of the debt to Islam than the Spanish language. The borrowed Arabic words are in most cases nouns, and they're the kind of objects and ideas which had (and in many cases still have) Arabic names in modern Spanish e.g. Fonda hotel (funduq), tahona bakery (tahuna mill), tarifa tariff (tarif notice, definition). As a rule, however, the Arabic word was taken over into Spanish with Arabic definite article joined to it, and then the Spanish article was added in front of that for example la alhaja the jewel (al-haja). Nevertheless the fact remains that the Spanish words borrowed from Arabic include some of the commonest objects of daily life. These are common words of every-day use, and the list might have been made longer. Suburbs, village, farm, are all known by Arabic words. The country man measures his corn by the fanega of one and a half bushels (faniqa a large sack), and divides it into

twelve celemines, each equivalent to a gallon (thamani, colloquial zemeni, eight), and he has another measure, the arroba (al-rub'a, fem.) a quarter (of a hundred weight) dry measure, or four gallons liquid. His entire vocabulary concerned with irrigation is Arabic, and so are the name of numerous flowers, fruits, vegetables, shrubs, and trees. Sugar azucar has passed into Spanish, Portuguese, and other European languages through the Arabic al-sukkar, Persian shakar, and not (as is often stated in Spanish) to the Latin saccharum. It may be surprising to learn that the Spanish-speaking peoples still make use of the Arabic phrase 'in sha **ALLAH**'. Other words borrowed from Arabic, which have survived in literary Spanish, are gradually dropping out under the influence of journalism. Spanish journalism, and particularly Spanish-American journalism, is strongly influenced by Paris, and the so-called Latin press has no love for words, which are not immediately intelligible in any Latin country.

What has been said of the destructive effect from cosmopolitan Latin journalism is no less true of Portuguese. A number of Oriental words passed into that language. Yet it is curious that some of the Arabic word which have survived there from their time have either died out in Spain or seem never to have become neutralized.. Many of the Spanish word in the foregoing list are also found under one form or another in Portugal.

Arabic place-names in Spain and Portugal

Places-names are unaffected by journalism and the map of Spain and Portugal is of extraordinary interest to a student of Arabic. Though some of the names are Arabized forms of older languages and many are of characteristically mixed origin, Arabic and of Romans, they form when taken together a striking demonstration of the mark the Islamic peoples left on the peninsula. Mountains and hills, capes and islands, sandbanks, rivers, lakes, and hot springs; plains, fields, woods, Gardens, trees, and flowers; caves and mines; colors; and works of man such as farms, villages, towns, markets, Mosques, paved roads, bridges, castles, forts, mills, towers, have all become geographical names. Thus jabal (mountain) appears in Monte Jabalcuz, in Jabalcon, Jabaloyas, Jabalquinto. Taraf (capes) has given Trafalgar, taraf al-ghar, Cape of the cave; al-jazira, the island, appears in Algeciras and Alcira. Ramla, a sandy river-bed recalls the origin of La Rambla, the principal St of Barcelona; but the Arabic word most familiar in Spain in connection with the river is wadi, which in Spain is spelt guad, though still often pronounced with the w. Thus we find Guadalquivir, wadi-al-kabir, the great river; Guadalajara, wadi-all-hijara, the river of stones, Guadalcazar, wadi-al-

Castle, the river of the fort and Guadalupe, wadi-al-lubb, the wolf river. Arabic words for fortress have produced many geographical names in Spain from al-qal'a, we have alcala. The suburbs, al-rabad, gave rise to the Spanish name arrabal. The suburbs of a town were also known as al-barra and al-balad, one of which will account for names such as albalat, albalate, albolote.

Races and Languages in Moslem Spain

Yet it cannot be denied that while Europe lay for the most part in misery and decay, both materially and spiritually, the Spanish Muslims created a splendid civilisation and an organized economic life. Muslim Spain played a decisive part in the development of art, science, philosophy, and poetry, and its influence reached even to the highest peaks of the Christian thought of the thirteenth century, to Thomas Aquinas and Dante. Then, if ever, Spain was 'the Torch of Europe'.

If cultivated Moz'arabes were bilingual, the majority were illiterate; the few who could read and write preferred to do so in Arabic rather than in Latin. Latin was a clumsy language to write compared with Arabic, and the Latin literature available was of no great importance; so we find a bishop in Cordova reprimanding his flock not so much for lack of faith as for preferring Arabic poetry and prose to the homilies of the fathers. Again, the Muslims had introduced paper, and books were more quickly and cheaply produced in Arabic rather than in Latin.

Cordova in the 10th century was the most civilized city in Europe, the wonder and admiration of the world, a Vienna among Balkan States. Travelers from the North heard with something like fear of the city which contained 70 libraries and nine hundred public baths; yet whenever the rulers of Leon, Navarre or Barcelona needed such things as a surgeon, an architect, a dress maker or a singing-master, it was to Cordova that they applied. Queen Tota of Navarre, for instance, brought her son Sancho the Fat to be cured of his corpulence.

The Legacy of Islam
Sir Thomas Arnold
Oxford - 1931

European languages abound in the Arabic technical and non-technical forms. If history is to be turned down, linguistic evidence can be found to show that there are hundred of words of Koranic origin. The concise Oxford Dictionary includes 405 of these

words of which 285 are included in the Pocket Edition of Oxford Dictionary. The scientific, economic, political, social and literary concepts were given to Europe by Koranic civilisation. There are about a thousand main words of Arabic origin in English and many thousands derivatives from these words. Koranic people created their own sciences.

The result of the Crusades was more important physiologically than were the Crusades themselves. The commercial treaties which followed not only legalised the existing trade between East and West but extended it enormously. The Arabic names of the different kinds of merchandise and of ship, as well as for the operations of business, then came into current use in Mediterranean countries. Again, those words were already known in Europe, at any rate to the Spaniards and Italians; but they now became, as they have remained truly international. Spain was for over five hundred years the home of an Islamic civilisation, the benefits of which she spread, through trade, through her universities, and through literature, over the rest of civilized Europe. Many of the Arab scholars in Spain read and wrote Latin, and all Mozarabs (Spanish Christians living under Moslem rule) spoke Arabic. Arabic affected Spanish at the most impressionable period of its growth-the beginning-at that time when Latin was first changing, its new environment. Arabic affected the Spanish vocabulary so extensively because it was the language not only of the ruling class but also of a higher civilisation.

Arabic did not affect the grammatical structure of the Spanish, except, perhaps, in increasing the frequency of recurrence of the definite article: even less than Norman French affected the grammetical structure of English; but like French or English, Arabic had an enormous influence in enlarging and enriching the Spanish vocabulary. And the borrowings of the languages, the Spanish vocabulary had been those very words from Arabic which were strange to Europe, borrowed from Spain when she was teaching the rest of Europe what she had learned from the Arabs. Thus Arabic affects the vocabulary of European languages primarily through Spanish. And not only Europe did seat teach, but Spanish America; and even in the United States, it is said, of the Spanish words which the Red Indians adopted., about two hundred are of Arabic origin.

Dr. Walt Taylor
(Clarendon Press London - 1933)

Arabic was the first language to introduce critical activity in the world. Criticism of traditions of the Prophet, which goes back to the 8th century was the earliest example. This critic was not unbiased but remarkable accurate and genius too. From the eighth century to the fifteenth, Arabic was the scientific and the most progressive language of mankind. Any one wishing to be well informed, up-to-date had to learn Arabic and many did so. As now any one who wants to follow the intellectual advance, must learn the English language. The charm which the Arabic language and literature never fail to exert on its devotees lies in the un-expectedness, and its love of direct speech apart from any other contribution which this language had made to the language of Europe. Besides we owe a great debt to Arabic in the field of studies of Old Testaments. Arabic language is the best vehicle of the most modern sciences and techniques.

Progress of Islamic Science
Goldziher, Ignaz
New Haven - 1917

That it was the Arabisation of the occupied provinces rather than their military conquests, that is the true wonder of the Islamic expansion. Arabic language remained the sole instrument of culture even after the fall of the purely Arab Kingdom. Arabic admiration and usage was not confirmed to the elite but public of Europe had started it with amazing speed which startled their church to the highest degree. The English, the German, the French having a taste for learning studied Arabic - a practice indulged in later centuries.

The most eminent historians and opponents of Islam, Prof. Dozy and Prof. Alvare say 'captivated by the glamour of Arabian language, Science and Literature, European of taste despised Latin authors and wrote only in the language of Koran. Christians delighted in the study of the Arabic works of Mohammedan theologians, scientists and philosophers, not in order to refute them but to acquire a correct and elegant Arabic style. 'Where today not a layman can be found who reads the Latin communication Holy scriptures. Alas! The Christians who are most conspicuous for their talents have no knowledge of any literature or language save the Arabic; they read and study with avidity Arabian Books; they amass whole Libraries of them at a vast cost and they everywhere sing the Arabic Lore.

On the other hand at the mention of Christian Books they disdainfully protest that such works are unworthy of their notice. The pity of it, Christians have forgotten their own

tongue and scarcely one in a thousand can be found able to compose, in fair Latin a letter to a friend. But when it comes to writing Arabic, how many there are who can express themselves in that language with the greatest elegance and even compose verses which surpass in formal correctness those of the Arabic themselves.

The Church deemed it necessary to translate Old and New Testament of the Bible in Arabic not for missionary purpose but for its own community whose language had become the language of Arabs only. Even beyond the vast areas that were permanently Arabised, Arabic exercised a tremendous influence on languages concerning the world's concepts and ideas. Islam was not only a system of belief and cult. It was a system of state, society, law, thought, art and science.

Sheria is not only a morative code of law but also in its social and political aspects, a pattern of conduct, and ideal towards which men and society must strive. Islam admitted no legislature power. Since, law could come only from God through revelations but customary law and civil legislature, the will of the ruler, survived with occasionally limited recognition from the jurists, the divinely granted Sheria regulated every aspect of life - not only belief and culture but also public, constitutional, international, private, criminal and civil law. Arabic language is the language of a great and diverse culture. Scientific learnings were, in origin, in Arabic, expanded mainly by development from within, forming new works. As an example of the process we may choose the Arabic word for 'Absolute' a notion quite un-necessary to the pre-Islamic Arabs, it is 'Mujarrad', the passive participle of 'Jarrada', to strip bare or denude, a term normally used for locusts and connected with the words 'jaraada', locust, and 'jarrada', leaf'.

The language created in this way possessed vivid, concrete and pictorial vocabulary with each term having deep roots in a purely Arab past and tradition. It allowed the direct and un-cushioned impact of ideas on the mind through concrete and familiar words and of unrestricted penetration to and from the deeper layers of consciousness. The Arabic language thus enriched the sole instrument of culture, even long after the fall of the purely Arabic Kingdom.

Comparative tolerance of Islam is particularly striking to an European observer. Unlike his western contemporaries; the Muslim rarely felt the need to impose his faith by force on all those who fell subject to his rule, he left them their religious, economic and intellectual freedom and the opportunity to make a notable contribution to his own civilisation.

The first feature strikes us is the unique creative and assimilative power, often misrepresented as merely imitative. The Arab conquests united for the first time in history, the vast territories stretching from the borders of India and China to the approaches of Greece, Italy and France. For a much long time by their faith and language, Koran united in a single society two formerly conflicting cultures - the millennial and diversified Mediterranean traditions of Greece, Rome, Israel and Persia, with its own patterns of life and thought, and its fruitful contact of the other great cultures of remoter East of the cohabitation of many people's faith and cultures within the confine of the Koranic society. A new civilisation was born, diverse in its origins and its character, yet bearing on all its elements.

History of Islamic Civilisation
London University - 1958

Through Arabic, it was, and not by Latin routes that the world of research received its light of power and progress.

The History of the World
H. G. Wells

The Arabic language today is the medium of daily expression for some forty-five million people. For many centuries in the Middle Ages it was the language of learning and culture and progressive thought throughout the civilized world. Between the ninth and the twelfth centuries note works, philosophical, medical, historical, religious, astronomical and geographical, were produced through the medium of Arabic than through any other tongue. The languages of Western Europe still bear the impress of its influence in the form of numerous loan-words. Its alphabet, is the most widely used system in the world. It is the one employed by Persian, Afghan, Urdu, and a number of Turkish, Berber and Malayan languages

History of the Arabs
Philip K. Hitti

The European Culture

The Greek Culture

The Greek throughout their culture preferred abstract thought to the study of concrete facts. Greek method of acquiring science was mostly speculative, hence science as such could not make any head way in the hands of Greek. Greeks never made a single experiment, never advanced in Philosophy and Science, no literature except superficial was ever composed.

The Greek civilisation ended in failure not because of lack of intelligence but because of the lack of morality and character, not only personal but even public. Greek civilisation was pagan in character and possessed no proper concept of personality, whereas morality is inseparably related to personality and has developed under the teaching of revealed Books. And not only the repression of self indulgence, but also sufficient subordination of individual ambition to the common will, the essence of fair movement fails for a similar reason, it was individual not social.

Greek philosophy was an attempt to interpret experience rationally, the spirit and method. This philosophy was opposed to the experimental method. Greek thought was dominated by that philosophy, which they lived upon as the very crown of knowledge. The Greek only generalised, systematised and theorised. Experimental inquiry was alien to Greek temperament. It was the force of Koran that gave rise to the spirit of experimental research and laid the foundation of modern science. The world remained for a long time under the misunderstanding, but the latest research has rendered the incontrovertible historical fact that the Koranic people and not the Greeks were the inventors of modern science.

The Hypothesis of science are based on observed facts which when confirmed by criticism and experiment turn into Laws of Nature. This was missing in what is termed as the Greek science. His science was based on collection of facts and their classification. Greek was the genius not scientist. The Greeks laid great stress on truth and beauty, the Romans on strength and utilitarianism and the Christians on love and charity. They considered science not only useless but pernicious. The Byzantine had possessed in arts and letters all the best models in the world, yet in a thousand years never produced one original.

Millions of Greeks never advanced one step in philosophy or science - never made a single practical discovery, composed no poem, no tragedy worth perusal. The spirit of their superficial literature - if literature it can be called - is well shadowed forth in the story of the patriarch Photius, who composed at Baghdad, at a distance from his library, an analysis of 280 works he had formerly read.

Greek Philosophy

The role of Koran in human history is of revolutionary importance as it revolted against all Greek traditions and over all speculative and over all abstract nature of things. Koran emphasised that "Nature and History are the two sources of knowledge of study of concrete signs of natural phenomena by observation and experiment." For Science, which is defined as the ordered knowledge of natural phenomena and the relation between them, is based on 'observation and experiment'. The hypothesis of science are formed on the basis of observed facts which when confirmed by criticism and experiment are turned into laws of nature. This was missing in what is termed as the Greek Science. Greeks were primarily asking philosophic questions infected with eager generality. They demanded clear bold ideas, and reasoning for them was 'genius' not 'Science'.

Great misunderstanding about the reviver of Greek science, Aristotle, is an example. His merit as a Scientist was purely based on collection of facts and their classification. He never resorted to experiment. He believed that man has more teeth than woman, and that bodies fall to the ground at rates proportionate to their weight. But, it never occurred to him that teeth could be counted and weights could be thrown from a height to see whether they fall below at the same time, or one after another. This resulted from the Greek over-occupation with abstract than the concrete.

History of Philosophy
Dr. Oswald Seengler

The Roman Heritage

It is tempting to believe that the modern world owes a vast debt to the Romans: first of all, because of Rome is nearer to us in time than any of a the civilisation of antiquity; and secondly, because Rome seems to bear such a close kinship to the modern temper. The resemblances between Roman history and the history of Great Britain or America in the 19th and 20th centuries have often been noted. The Roman economic evolution progressed all the way from a single agrarianism to a complex urban system

with problems of unemployment, monopoly, gross disparities of wealth, and financial crisis. Roman society like wise exhibited its modern phenomena of divorce, declining birth rate, and love of spectacular amusement. The Roman Empire, in common with the British and American, was founded upon conquest and upon visions of manifest destiny. It must not be forgotten, however, that the spirit of Rome was the spirit of classical man, and that, consequently, the similarities between the Roman and modern civilisation are not so important as they seem. As we have noted already, the Romans despised industrial activities, and they were incredibly naive in matters of science. Neither did they have any idea of the modern national state; the provinces were mere appendages, not integral parts of a body politics. It was largely for this reason that the Romans never developed an adequate system of representative government. Finally the Roman conception of religion was vastly different from our own. Their system of worship, like that of the Greeks, was external and mechanical, not inward or spiritual in any sense. What Christians consider the highest ideal of piety-an emotional attitude of love for the divine the Romans regarded as gross superstition.

Roman Science

But, their own writers on scientific subjects were hopelessly devoid of critical intelligence. The most renowned and the most typical of them was Pliny the elder, who completed about 77 A. D. a voluminous encyclopedia of science, which he called natural history. This work was admittedly compilation, supposed to have been based on the writings of nearly five hundred different authors. The subjects discussed varied from cosmology to economics. Despite the wealth of material it contains, the work is of limited value. Pliny was totally unable to distinguish between fact and fable. In his estimation, the weirdest tales of wonders and portents were to be accepted as of equal value with the most solidly established facts. He described the marvels of a primitive people whose feet all turned back ward, of a country where females conceived at the age of 5 and died at the age of 8, and of a tiny Mediterranean fish which could cause ships to standstill merely by adhering to them. The other best-known author of an encyclopedia of science was Seneca, the historic philosopher, who took his own life at Nero's command in 65 A.D. Seneca was less credulous than Pliny but no more original. Besides, he maintained that the purpose of all scientific study should be to divulge the moral secrets of nature. If there was any Latin who could be considered an original scientist the title would have to be given to Celsus, who flourished during their reign of Tiberius. Celsus wrote a comprehensive treatise on medicine, including an excellent manual of surgery, but there as a strong suspicion that the entire work was compiled,

if not actually translated, from the Greek. Among the operations he described were tonsillectomy, operations for cataracts and goiter, and plastic surgery.

The Decline and the Fall of the Roman Empire
Edward Gibbon - 1898

Role of the Christian Church in Medieval Ages

About two thousand British people are said to have become Muhammadans during the last twenty years. As this statement occurs in the Christian Journal, it is likely to be true. And if it is true, we can be fairly certain that these converts have not been gained from the lower classes in this country. Bearing in mind, too, the immense difficulty Christian missionaries have in gaining converts from the highest classes of the Muhammadans, we feel fairly confident that this is a better record of captures than Christian missions can produce in spite of their extravagant expenditures.

The European Culture

The presence of the Saracens in Spain offered an incessant provocation to the restlessness intellectual of the West, now rapidly expanding, to indulge itself in such forbidden exercises. Arabian influence, unseen and silently was diffusing itself throughout France and Europe, and churchmen could sometimes contemplate a refuge from their enemies among the infidel. In his extremity, Abelard himself looked forward to a retreat among the Saracens – a protection from ecclesiastical persecution. At the time of appearance of Moslems in Europe, the native European population was in barbarous, savage state, unclean in person, benighted in mind, inhabiting huts in which it was mark of wealth if there were bulrushes on the floor and straw mats against the wall, miserably fed on beans, vetches, roots and even bark of trees; clad in garments of untanned skin, or at the best, of leather - perennial durability, but not conducive to personal purity – a state in which the pomp of royalty was sufficiently and satisfactorily manifested in the equipage of the sovereign, an ox-cart, quickened in their movements by the goads of pedestrians serfs, whose legs were wrapped in wisps of straw; from a people, devout believers in all the wild fictions of shrine-miracles and preposterous relics; from the degradation of a base theology, and from the disputes of ambitious ecclesiastics for power. The clergy only could read, hardly any could write. They were full of hatred of human learning with degraded religious ideas, practices, superstitions and ignorance. It is pleasant to turn to the south-west corner of the continent, where,

under auspices of a very different kind, the irradiation of light of Islam were to break forth. The crescent in the West was soon to pass eastward to its full.

The Freethinker
April 15, 1937

European Monarchs

King Leo the Isaurian, Emperor of Roman Empire (718 A.D.) the founder of the Byzantine Empire, has been mentioned as "Koranic minded" by the famous European historian Theophanes. Leo laid his state policy on Koranic doctrines through an Edict dated 726 A.D. Leo was everywhere denounced as Mohammedan Infidel, an enemy of the Mother of God,; but with inflexible resolution he persisted in his determination as long as he lived. His successors, Emperor Constantine V (751 A.D.), Emperor Leo-IV (775 A.D.) and Emperor Constantine VI followed the movement, which bears Koranic doctrines and culture up to 780 A.D. A council was summoned by Emperor Constantine V in 754 A.D. at Constantinople which was attended by 338 bishops. The Council unanimously approved of the Koranic reforms and doctrines but the monks rebelled. The Emperor was insulted to his face and denounced as a second apostate Julian.

Emperor Otho III, King of Germany and Emperor of Holy Roman empire (940 A.D.) is known as a great Koranic Scholar and so are his successors, Roger-I, Roger-II and Roger-III, emperors up to the year 1200 A.D. In the year 953 A.D. King Otho sent his envoy, Thon Lotharingtan Monk to Islamic learning centres for collecting books on Koranic Science and Philosophy. He brought a large number of manuscripts for the Emperor, and the Koranic learning thus permeated his empire. Under the influence of Koranic studies, Emperor Otho III was contemplating a revolution in the Empire.

Pope Sylvester-II, a great devotee of Koran and Koranic science, a man of extraordinary erudition and a great scholar of Arabic was champion of making revolutionary reforms on the basis of Koranic doctrines and culture, against the prevailing superstitious policy of Rome. He was a distinguished graduate of the Muslim European University of Toledo of 10th Century. He spoke Arabic with the fluency of a Saracen. His residence at Cordova, where the Khalif patronised all the learning and science of the age and his subsequent residence in Rome, where he found an inconceivable ignorance and immorality, were not lost upon his life. He established an Arabic College in the city of Rheims. In the process of the political movements Gerbert was appointed to the

Archbishopric of Rheims. His election not only proved unfortunate, but in the torturous policy of the times, he was removed from the exercise of his episcopal functions and put under interdict. In all this we see the beginning of struggle between the Koranic learning and moral, and the Italian ignorance and crime, which was at last to produce such important results.

On the death of Pope Gregory V, Emperor Otho issued a decree for the election of the great scholar Gerbert as Pope whom Otho considered able to carry out reforms in the Church and the Empire. Pope Sylvester-II succeeded Pope Gregory-V and became a great champion of Emperor Otho's Koranic reforms. But Rome was not willing thus to surrender her sordid interests; she revolted. Tusculum, the disgrace of papacy rebelled. It required the arms of Emperor Otho to sustain his pontiff. For a moment it seemed as if the Reformation might have been anticipated by many centuries - that Christian Europe might have been spared the abominable papal disgrace awaiting it. There was a learned and upright Pope Gerbert (Sylvester-II) and youthful Koranic scholar Emperor Otho III, but Roman revenge in the person of Stephania, the wife of the murdered Crescentius, blasted all these expectations. From the hand of that outraged noble criminal, the unsuspecting Emperor took the poisoned cup and left Rome only to die. He was but twenty-two years of age. Sylvester, also, was irretrievably ruined by the drugs that had been stealthily mixed with his food. He soon followed his patron to the grave.

Frederick, the King of Germany and Emperor of Roman Empire (1212-1250 A.D.), a great scholar of his age, especially of Koranic science and famous for his intellectual grandeur, founded Arabic Colleges at Naples, Florence and Palermo (1224 A.D.). He was mentioned as a Muslim in his personal habits and official life. He practised Koranic recitation in the 'Holy Sepulchres'. He made two sons of Ibn-e Rushd, a great Muslim Philosopher, as his Court Resident Directors. He prided in having an army of fifty thousand European-Muslims stationed at various places in his Empire. He established cantonments at Nocera and Luceria, in Italy with thirty thousand Mussalman soldiers, with whom it was impossible for his enemies to tamper.

His son Enzio continued the policy of this father and collected a large number of Arabic manuscripts. Frederick combated against the Koranic opponents for thirty years, when at last he was poisoned by his intimate confidant, Peitro de Vinea, whom he had raised from beggary. Frederick's son Enzio was taken as prisoner. The Saracenic influences had thus found an expression in the South of France and in Sicily, involving

many classes of society, from the poor men of Lyons to the Emperor of Germany. The fall of Emperor Frederick was not followed by destruction of the Koranic influences he represented. They not only survived him but were also destined in the end to overcome the power, which had transiently over thrown them. Inspite of the awful persecutions, instead of being extirpated, they rooted themselves deep among the laity and even among the priestly order.

A History of The Intellectual Development of Europe
New York – 1875

Though himself an uncultured Christian, Roger I († 1101) drew from the Moslems the mass of his infantry, patronized Arab learning, surrounded himself with Eastern philosophers, astrologers and physicians and allowed the non-Christians full liberty to follow their rites. The case of the poet 'Abd al-Jabbar ibn-Hamid (ca. 1055-1132), who though born in Syracuse retired at the Norman conquest to the Spanish court of al-Mu'tamad, was exceptional. On the whole, Roger maintained the former system of administration and even kept high Moslem officials. His court at Palermo seemed more Oriental than Occidental. For over a century after this Sicily presented the unique spectacle of a Christian kingdom in which some of the highest positions were held by Moslems.

In this century the trade of the country remained to a large extent in the hands of Moslem merchants and the cultivation of the land continued to prosper under Arab husbandmen who, as in Spain, knew how to make the land produce abundantly. Sugar cane, date palms, cotton, olives, oranges, mulberries and other plants and fruits were introduced by the Arabs. Sericulture was established by the Normans after 1147. Papyrus the like of which ibn-Hawqal saw nowhere except in Egypt, was now cultivated in greater abundance than ever before. From its fibre cordage was made for ships. Ibn-Jubayr, who visited the island in 1184, was greatly impressed by its fertility, rich resource and plentiful means of sustenance. He particularly noted grape-vines and other trees cultivated in symmetrical rows.

The earliest extant paper document from Europe is an order in Greek and Arabic, issued by the wife of Roger I, presumably in 1109; but it is more reasonable to suppose that the paper of this document was imported by Sicilian Arabs. From the time of King Roger II we have the earliest coin bearing a date in Arabic numerals (1138) and an Arabic inscription.

The line of Sicilian Arabophiles started by Roger I culminated in his son and second successor Roger II (1130-54) and in Frederick II. Roger II dressed like a Moslem and his critics called him the 'half heathen king'. His robe bore decorative Arabic characters. Even under his grandson William II (1166-89) ibn-Jubayr saw Christian women of Palermo wearing Moslem costumes. The chapel built by Roger II in his capital had its ceiling covered with Fatimid influenced paintings and Kufic inscriptions. Arab craftsmen were undoubtedly employed in the construction of this and other Sicilian monuments. Several ivory objects, including caskets and croziers now in the Museo Cristiano of the Vatican and other museums typify Siculo-Arabic craftsmanship of this period. Roger's fleet, which raised Sicily to the position of the leading maritime power in the Mediterranean, was built and commanded by amirs of whom the greatest was George (Jurji) of Antioch, a Greek formerly in the service of a Moslem prince in al-Mahdiyah, Africa. The highest office the realm was that of ammiratus ammiratorum (amir al-umara).

The chief ornament of Roger II's court was al-Idrisi, the most distinguished geographer and cartographer of the Middle Ages. Born in Ceuta in 1100 of Hispano-Arab parents, abu 'Abdullah Muhammad ibn-Muhammad al-Idrisi (d. 1166) did his life work at Palermo under the patronage of Roger II. His Rogerian treatise (Kitab Rujar) entitled Nuzhat al-Mushtaq fi Ikhturaq al-Afaq (the recreation of him who yearns to traverse the lands) not only sums up the main features of such preceding works as those of Ptolemy and al-Mas'udi, but is primarily based upon original reports submitted by observers who had been sent to various lands to secure data. In his critical collation of the material al-Idrisi shows a remarkable breadth of view and a grasp of such essential facts as the sphericity of the earth. Besides this monumental work, al-Idrisi constructed for his Norman patron, a celestial sphere and a disk-shaped map of the world, both in silver.

The second of 'the two baptised sultans of Sicily' was Roger II's grandson Frederick II of Hohenstaufen (1215-50), who ruled both Sicily and Germany and, besides holding the title of emperor of the Holy Roman Empire after 1220, became king of Jerusalem by his marriage in 1225 with the heiress Isabelle of Brienne. The Emperor Frederick therefore was the highest civil authority in Christendom. Three years after his marriage, he undertook a Crusade, which inoculated him with more Moslem ideas.

Astrologer Theodore was preceded by Michael Scot, who from 1220 to 1236 represented in Sicily and Italy the learning of Moslem Spain. Scot made for the emperor

from Arabic, a Latin summary of Aristotle's biological and zoological works, particularly De animalibus, with ibn-Sina's commentary, which he dedicated to his patron as Abbreviatio Avicenne.

A contemporary English chronicler claims that al-Nasir received in 1213 from King John, of Magna Charta fame and brother of Coeur de Lion, an embassy offering to hold England under tribute to him and to exchange the Christian faith for Islam.

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Napoleon Bonaparte's attitude towards Islam

In July 1799, Napoleon Bonaparte talking to the Sheikh of Cairo said, "I am astonished to see you chagrin over my victory. You have not yet been able to appreciate me. Yet I have often told you that I was a Mussalman, that I believe in the oneness of God, that I honored the Prophet Muhammad (peace be upon him) and that I love the Mussalmans. You have not placed faith in my words; you have supposed that I was impelled to them by fear. I hate the Christians, I have destroyed their religion, overturned their altars, killed their priests, smashed their crosses, and denied their faith. And yet I see them rejoicing in my joy and sorrowing for my trouble."

August 13, 1799 was the anniversary of the birth of the Prophet of Islam. Bonaparte was concerned for the celebration of the customary festival with special splendor; he wished it to provide the French with the opportunity of demonstrating the identity of French feelings with those of the native Mussalmans. Cairo was beflagged and decorated; in the evening the streets were eliminated, and in the Esbekieh square salvos of artillery were fired and fireworks were let off. As guest of the Sheikh El Bekri, in the midst of those whom the French called the Great Sheikhs of Cairo, Bonaparte listened to the declamation of Arabic poems in honor of Prophet Muhammad (peace be upon him), to the ritual prayer, and to the reading of the genealogy of the Prophet (peace be upon him).

Such was the importance attached by Bonaparte to the celebration of this Mussalman festival that he described it in broad outline in a general order signed by himself, ordering the commandants of provinces to bring the fact to the knowledge of the whole population by means of a circular in Arabic which was sent to every village. "Never in human memory," he wrote, "has such brilliance been witnessed. All present were

amazed at the site of the respect the French had for Islamism and for the law of the holiest of the Prophets."

Bonaparte: Governor of Egypt
F. Charles – Roux - 1937

The Muslim Civilisation

There is hardly an area of human experience where Islam has not enriched the Western tradition. Foods and drinks and medicaments, armour and heraldry, industrial and commercial and maritime techniques, and again artistic tastes and motives, not to speak of many terms of astronomy or mathematics - a list indicative of full measures of the Islamic contribution would take up many a page without being even remotely complete. The very existence of the Muslim world has done much to mould European history and European civilisation. The Crusades were, in many ways, the greatest and most consequential adventure on which medieval man embarked. Muslim narrative and poetical imagery, Muslim eschatology and the boldness of Muslim mysticism, all have left their traces on the medieval West. The greatest theologians and the greatest poets of European Middle Ages are deeply indebted to Islam for inspiration- spiritual as well as material. Thomas Aquinas uses Maimonides (d. 1204) and Averroes (d. 1198), and he employs a manner of argumentation familiar from Muslim scholasticism. Dante's debt to Muslim visionaries, to whose ideas translations had given a certain vogue, can hardly be doubted. Parallel effort in alchemy and astrology, with Islam as teacher and Christendom a self-willed student, introduced more concepts and associations to be held in common.

Medieval Islam
Gustave E. Von Grunebaum
The University of Chicago Press, U.S.A. 1953

For the fullest development of its cultural life, Europe cannot do without the force and capacities, which lie within the Islamic society. Within the western world, Islam still maintains the balance between exaggerated opposites. Opposed equally to the anarchy of Europe nationalism and the Regimentation of Russian communism, it has not succumbed to that obsession with the economic side of life, which is characteristic of present-day Europe and present-day Russia alike. Its social ethic has been admirably summed up by Professor Massignon, "Islam has the merit of standing for a very equalitarian conception of the contribution of each citizen by the tithe to the resources of the community; it is hostile to unrestricted exchange, to banking capital, to state loans, to indirect taxes on objects of prime necessity, but it holds to the rights of the father and husband, to private property, and to commercial capital. Here again it occu-

pies an intermediate position between the doctrines of Bourgeois capitalism and Bolshevist communism.

But Islam has yet a further service to render to the cause of humanity. It stands after all nearer to the real East than Europe does, as it possesses a magnificent tradition of inter racial understanding and co-operation. No other society has such a record of success in uniting in an equality of status, of opportunity, and of endeavour. The great Moslem communities of Africa, India and Indonesia, perhaps also the small Moslem communities in China and the still smaller community in Japan show that Islam has still the power to reconcile apparently irreconcilable elements of race and tradition. If ever the opposition of the great societies of the East and the West is to be replaced by co-operation, the mediation of Islam is an indispensable condition. In its hands lies very largely the solution of the problem with which Europe is faced in its relations with East.

Whither Islam?
H. A. R. Gibb
Victor Gollancz Ltd. London - 1932

The Moslem Conquests

Within a hundred years of the passing away of the Prophet of Islam, nearly one-third of the civilised world was under Moslem domination. The Saracenic Empire extended from the borders of India to the Strait of Gibraltar and the Pyrenees Mountains. One after another with startling rapidity Persia, Syria, Egypt, North Africa, and Spain had been conquered. How can this prodigious expansion be explained? Contrary to what many people believe, it was not due primarily to religious causes. The Moslems were not engaged in a great crusade to impose their belief upon the rest of the world. Naturally there were outbreaks of fanaticism from time to time, but as a general rule the Moslems of this period did not really care whether the nations they conquered accepted their religion or not. Subject peoples were usually quite leniently treated. As long as they refrained form the possession of arms and paid the tribute levied on them, they were permitted to retain their own beliefs and customs. Jews and Christians lived unmolested in the Moslem empire for centuries, and some of them rose to positions of prominence in political and intellectual circles.

Western Civilisations - Their History and Their Culture
Edward McNall Burns - 1941

In medieval times Arabia gave birth to a people who conquered most of the then civilized world, and to a religion – Islam - which still claims the adherence of over three hundred and fifty millions of people, representing nearly all the races and many different climes. Every eighth person in our world today is a follower of Muhammad (peace be upon him), and the Moslem call to prayer rings out through most of the twenty-four hours of the day, encircling the larger portion of the globe in its warm belt.

Around the name of the Arabs gleams that halo which belongs to the world-conquerors. Within a century after their rise, these people became the masters of an empire extending from the shores of the Atlantic Ocean to the confines of China, an empire greater than that of Rome at its zenith. In this period of unprecedented expansion they 'assimilated to their creed, speech, and even physical type, more aliens than any stock before or since, not excepting the Hellenic, the Roman, the Anglo-Saxon, or the Russian'.

It was not only an empire that the Arabs built, but a culture as well. Heirs of the ancient civilization that flourished on the banks of the Tigris and the Euphrates, in the land of the Nile and on the Eastern shore of the Mediterranean, they likewise absorbed and assimilated the main features of the Greco-Roman culture, and subsequently acted as a medium for transmitting to medieval Europe many of those intellectual influences which ultimately resulted in the awakening of the Western world and in setting it on the road towards its modern Renaissance. No people in the Middle Ages contributed to human progress so much as did the Arabians and the Arabic-speaking peoples.

While besieging Babylon, 'Amr attacked 'Ayn Shams in July 640. The Byzantine army was utterly routed. Theodorus fled to Alexandria and Cyrus was shut up in Babylon. The siege was pressed by the Arabians, who had no engineering or mechanical devices for reducing the fort. The treacherous Cyrus secretly sought to buy off the besieger, but to no avail. The usual three choices were offered: Islam, tribute or the sword. The following words put in the mouth of Cyrus' envoys purport to sum up the impression created by the Arabians:

> We have witnessed a people to every one of whom death is preferable to life, and humility to prominence, and to none of whom this world has the least attraction. They sit not except on the ground, and eat naught but on their knees. Their leader (Amir) is like unto one of them: the low cannot be distinguished from the high nor

the master from the slave. And when the time of prayer comes none of them absents himself, all wash their extremities and humbly observe their prayer.

The story that by the Caliph's order 'Amr for six long months fed the numerous bath furnaces of the city with the volumes of the Alexandrian library is one of those tales that make good fiction but bad history. The great Ptolemic Library was burnt as early as 48 B. C. by Julius Caesar. A later one, referred to as the Daughter Library, was destroyed about A. D. 389 as a result of an edict by the Emperor Theodosius. At the time of the Arab conquest, therefore, no library of importance exited in Alexandria and no contemporary writer ever brought the charge against 'Amr or 'Umar.

History of the Arabs
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Greek science had ceased to be all living force by the time Koranic people penetrated Rome and Persia. Many a shameless European plagiarist like Constantine claimed for themselves the Arabic works, which they translated into Latin. Many Muslims authors' names were Latinised to hide their identity, like Jabir Ibn-e Hayyan into Geer, the father of Chemistry of Europe. The name of Ibn-e Baja Abu Baker was Latinised into Avempace, Ibn-e Daud into Avendeth, Abu Muhammad Nasir Farabi into Farabius, Abu Abbas Ahmed into Al-Reagnus, Ali Khalil into Alkli, Abu Abdullah Muhammad Ibn-e Jabir Al-Batani into Batgnius, Ibn-e Al- Jazzar into Alggzar, Ibn-e Zuhr into Avenzoar, Abul Abbas Ahmad Ibn-e Jibril into Fragnius, Al- Biruni into Patranginus, Hunain Ibn-e Ishaq into Jonnitus and Abul Wali Ibn-e Rushd into Averroes.

Le Monde Islamique
Prof. Max Meyerhof, Paris University - 1926

Arabic Civilisation

The Armies of the Saracens had wrested from Christendom the Western, Southern, and Eastern countries of the Mediterranean; their fleets dominated in that sea. Ecclesiastical policy had undergone a revolution, Carthage, Alexandria, Jerusalem, Antioch, had disappeared from the Christian system; their bishops had passed away. Alone, of the great Episcopal seats, Constantinople and Rome were left. To all human appearance, their fall seemed to be only a question of time. The disputes of the bishop of Rome with his African and Asiatic rivals had thus come to an untimely end. With nothing

more remained to be done; his communications with the Emperor of Constantinople were at the sufferance of the Mohammedan Navies. The imperial power was paralysed. The Pope was forced by events into isolation; he converted it into independence.

The military operations of the Arabians, mentioned before, over-threw the Byzantine political system, prematurely closing the Age of Faith in the East; their intellectual procedure gave rise to an equally important result, being destined, in the end, to close the Age of Faith in the West. The Muslims not only destroyed the Roman offshoot, they also impressed characteristic lineaments on the Age of Reason in Europe. Even so important make it necessary for us to turn beside from the special description of European intellectual advancement, and offer a digression on the Arabians to their Age of Reason. It is impossible for us to understand their action in the great drama about to be performed, unless we understand the character they have assumed. In a few centuries the fanatics of Mohammed (Peace be upon him) had altogether changed their appearance. Great philosophers, physicians, mathematicians, astronomers, grammarians, had arisen among them. Letters and science, in all their various departments were cultivated. It is no mere fiction, but an accurate tradition that Christian rulers entrusted the education of their sons to Arabian tutors; and when afflicted with some obstinate disorder betook themselves to Cordova to consult the most eminent physicians.

A nation stirred to its profoundest depths by warlike emigration, and therefore ready to make, as soon as it reaches a period of repose, a rapid intellectual advance, may owe the path in which it is about to pass to those who are in the position of pointing it or of officiating as teachers.

The Making of Humanity
Dr. Robert Briffault, London – 1929

Moslem Governance

In the management of the revenue 'Amr disapproved the simple but oppressive mode of capitation, and preferred with reason of proportion of taxes, deducted on every branch from a clear profits of agriculture and commerce. A third part of the tribute was appropriated to the annual repairs of the dykes and canals, for essential service to public welfare. Under his administration, the fertility of Egypt supplied the dearth of Arabia; and a string of camels, laden with corn and provisions, covered almost without an interval the long road from Memphis to Medina. But the genius of 'Amr soon renewed the maritime communication and a canal, at least 80 miles in length, was opened from

the Nile to the Red Sea. The canal of 'Amr, beginning at Babylon, ran North to Bilbeis, then East to the Heroopolis, and then South reaching the Red Sea at Qulzum (Suez).

The Decline and the Fall of the Roman Empire
Edward Gibbon - 1898

The board for the inspection of grievances (Diwan al-nazr fi al-mazalim) was a kind of Court of Appeal or Supreme Court intended to set aright cases of miscarriage of justice in the administrative and political departments. Its origin goes back to the Umayyad days, for al-Mawardi tells us that 'Abd al-Malik was the first caliph to devote a special day for the direct hearing by himself of appeals and complaints made by his subjects. 'Umar II zealously followed the precedent. This practice was evidently introduced by al-Mahdi into the 'Abbasid regime. His successors al-Hadi, Harun, al-Ma'mun and those who followed received such complaints in public audience; al-Muhtadi (869-70) introduced this institution into Sicily, where it struck root in European soil.

A significant feature of the 'Abbasid government was the postal department, of which the chief was called Sahib al-Barid. Among the Umayyads Mu'awiyah, as we have already learned, was the first to interest himself in the postal service. 'Abd al-Malik extended it throughout the empire and al-Walid made use of it for his building operations. Historians credit Harun with having organized the service on a new basis through his Barmakid counsellor Yahya. Though primarily designed to serve the interests of the state, the postal institution did in a limited way handle private correspondence. Each provincial capital was provided with a post office. Routes connected the imperial capital with the leading centres of the empire and systems of relays covered these routes. In all there must have been hundreds of such relay routes. In Persia the relays consisted of mules and horses; in Syria and Arabia camels were used. The Barid was also employed for the conveyance of newly appointed governors to their respective provinces and for the transportation of troops with their baggage. The public could make use of it on the payment of a substantial sum. Pigeons were trained and used as letter-carriers. The first recorded instance relates to the news of the capture of the rebel Babik (Babak), chief of the Khurrami sect, carried to al-Mu'tasim by this method in 837.

History of the Arabs
Philip K. Hitti

Spread of Islam

Too often, in this world, success is the criterion of right. The Mohammedan appeals to the splendour and rapidity of his career as a proof of the Divine mission of his Apostle. It may, however, be permitted to a philosopher, who desires to speak of the faith of so large a portion of the human race with profound respect, to examine what were some of the causes, which led to so great a political result. From its most glorious seats Christianity was forever expelled: from Palestine, the scene of its most sacred recollections; from Asia Minor, that of its first churches; from Egypt, whence issued the great doctrine of Trinitarian orthodoxy; from Carthage, who imposed her belief on Europe.

Thus settled on the North of Africa the lurid phantom of the Arabian crescent, one horn reaching to the Bosphorous and one pointing beyond the Pyrenees. For a while it seemed that the portentous meteor would increase to the full, and that all Europe would be enveloped. Christianity had lost forever the most interesting countries over which her influence had once spread: Africa, Egypt, Syria, the Holy Land, Asia Minor, Spain. She was destined in the end to lose in the same manner the metropolis of the East. In exchange for these ancient and illustrious regions, she fell back on Gaul, Germany, Britain, Scandinavia. In those savage countries, what were there to be offered as substitutes for the great capitals, illustrious in ecclesiastical history, for ever illustrious in the records of the human race – Carthage, Alexandria, Jerusalem, Antioch, Constantinople?

Europe and other territories were not captured by swords but by sheer elegance, appeal to reason, culture, excellence of Koran and charm, and vast potentialities of the Arabic language. Islam spread by the gift of Koranic intellectual faith of pure belief and culture, and also a system of state, society, law, thought, science and art. It was the Arabisation of countries rather than the military conquest and use of force that is the true wonder of the Koranic expansion. By the sheer force of faith and language, Koran united in a single society two formerly conflicting cultures - the Millennial and diversified Mediterranean tradition of Greek, Rome, Israil, and the ancient Near East. Koranic people never felt the need to impose their faith by force on all who became subject to Koranic Rule. They left with them their religious, economic and intellectual freedom and the opportunities to make notable contributions to their own civilisation.

It is altogether a misconception that the Arabian progress was due to the sword alone. The sword may change an acknowledged national creed, but it cannot affect the con-

science of men. The conquest of Syria and the seizure of the Mediterranean ports gave to the Arabs the command of the sea. They soon took Rhodes and Cyprus. The battle of Cadesia and sack of Ctesiphon, the Metropolis and of Persia decided the fate of that kingdom. Syria was thus completely reduced under Omar, the second Khalif; Persia under Uthman, the third. If it be true that the Arabs burned the library of Alexandria, there was at that time danger that their fanaticism would lend itself to the Byzantine system: but it was only for a moment. They very soon became distinguished patrons of learning. It has been said that they overran the domain of science as quickly as they overran the realms of their neighbors. It became customary for the first dignities of the state to be held by men distinguished for their erudition. Some of the maxims current show how much literature was esteemed. "The ink of the doctor is equally valuable with the blood of the martyr." "Paradise is as much for him who has rightly used the pen as for him who has fallen by the sword." "The world is sustained by four things only: the learning of the wise, the justice of the great, the prayer of the good, and of valor of the brave." There were other very powerful causes as well. For many years the taxation imposed by the emperors of Constantinople on their subjects in Asia and Africa had been not only excessive and extortionate, but likewise complicated. This, the Khalifs replaced by a simple well-defined tribute of far less amount. This, in the case of Cyprus, the sum paid to the Khalif was only half of what it had been to the emperor; and indeed the lower orders were never made to feel the bitterness of conquest; the blows fell on the ecclesiastics, not on the population, and between them there was but little sympathy. On the payment of a trifling sum, the conqueror guaranteed to the Christians and the Jews absolute security for their worship. Numerous examples can be given of the scrupulous integrity with which the Arab commanders complied with their part of the contract. The example set by Omar was followed by Muawiyah, who actually rebuilt the church of Edessa for his Christian subjects; and by Abdulmalek, who, when he had commenced converting that of Damascus into a mosque, forthwith desisted on finding that the Christians were entitled to it by the terms of the capitulation. When the sovereign expressed such sentiments, it was impossible but that a liberal policy should prevail.

Besides, these there were other incentives not less powerful. To anyone who valued, it required the repetition of a short sentence acknowledging the unity of God and the Divine mission of the Prophet, and he forthwith became, though a captive or a slave, the equal and friend of his conqueror. Doubtless many thousands were under these circumstances carried away. As respects the female sex, the Arab system was very far

from being oppressive; some have even asserted that, "the Christian women found in the seraglios a delightful retreat." But above all, polygamy acted more effectually in consolidating the conquests; the large families that were raised -- some are mentioned of more than one hundred and eighty children -- compressed into the course of a few years events that would otherwise have taken many generations for their accomplishment. These children gloried in their Arab descent, and, being taught to speak the language of their conquering fathers, became to all intents and purposes Arabs. The irresistible effect of polygamy in consolidating the new order of things soon became apparent. In little less than a single generation all the children of the North of Africa were speaking Arabic.

It would have taken the Arabs many thousand years to have advanced intellectually as far as they did in a single century, had they remained in profound peace. They did not merely shake off that dead weight that clogs the movement of a nation, its inert mass of common people; they converted that mass into a living force. Arabic life was run through with an enormous rapidity because an unrestricted carrier was opened to every man; and yet quick as the movement was, it overwhelmed all the phases through which humanity must unavoidably pass.

Foremost Men of Science

The overwhelming superiority of Muslim culture continued to be felt throughout. Not only because the foremost men of science were Muslims, but also because cultural influences are essentially cumulative. The excellence of Muslim culture and science was already so well established even in Europe that other languages such as Latin and Greek were also used by scholars, but the works written in these languages contained nothing new. All the new discoveries and the new thought were published in Arabic. Strangely enough, the language of the Koran had thus become the international vehicle of scientific progress.

An Introduction to the History of Science
George Sarton
Carnegie Institution of Washington - 1927

The most valuable of all, the most original and the most pregnant books were written in Arabic. From the 2nd half of the eighth to the end of eleventh century, Arabic was the scientific, the progressive language of mankind. During that period any one wishing to be well informed and up-to-date had to study Arabic (a large number of non-

Arabic speaking people did so), even as now any one who wants to follow the intellectual advance must begin by mastering one of the great Western languages. It is not necessary to substantiate these statements, for my whole work is a proof of them. It will suffice here to evoke a few glorious names without contemporary equivalents in the West: Jabir Ibn Haiyan, Al-Kindi, Al-Khowarizmi, Al-Farghani, Al-Razi, Thabit Ibn-e Qurra, Al-Battani, Hunain Ibn Ishaq, Al-Farabi, Ibrahim Ibn Sinan, Al-Masudi, Al-Tabari, Abul Wafa, 'Ali Ibn 'Abbas, Abul Qasim, Ibn Al-Jazzar, Al-Biruni, Ibn Sina, Ibn Yunus, Al-Karkhi, Ibn Al-Haitham, 'Ali Ibn 'Isa, Al-Ghazali, Al-Zarqali, Omar Khayyam! A magnificent array of names which would not be difficult to extend. If any one tells you that the Middle Ages were scientifically sterile, just quote these men to him, all of whom flourished within a relatively short period, between 750-1100 A.D.

The Muslims were fired with such an enthusiastic curiosity that they spared no pains to study them as completely as possible. Obviously, they were endowed with a fair amount of scientific genius. Muslim culture radiated from a number of centres, which were distributed all the way from Spain and the Maghrib to Central Asia. They had time to accomplish numerous and remarkable investigations in mathematics, astronomy, chemistry, physics, technology, geography and medicine. They continued to produce great scientists in the thirteenth, the fourteenth, and even the fifteenth century.

Mediaeval historians who have neglected to consider Arabic literature thus have given us not only an incomplete but entirely false view of their subject.

Civilisation and Splendour of the Spanish Arabs

Scarcely had the Arabs firmly settled in Europe when they commenced a brilliant career. Adopting what now had become the established policy of the Commanders of the Faithful in Asia, the Emirs of Cordova distinguished themselves as patrons of learning, setting an example of refinement, strongly contrasting with the condition of native European princes. Cordova under their administration reached highest point of prosperity, boasted of more than two hundred thousand houses, and more than a million of inhabitants. After sunset, a man might walk through it in a straight line for ten miles by the light of the public lamps. Even 700 years after this time, there was not so much as one public lamp in London. Its streets were solidly paved. In Paris, centuries subsequently, whoever stepped over his threshold on a rainy day, stepped up to his ankles in mud. Other cities, as Granada, Seville, Toledo, considered themselves rivals of Cordova. The palaces of the Khalifs were magnificently decorated. These sovereigns

might well look down with supercilious contempt on the dwellings of the rulers of England, Germany and France were scarcely better than stables - chimneyless, windowless, with a hole in the roof for the smoke to escape, like the wigwams of certain Indians.

Moslem Palaces and Gardens

The Spanish Mohammedans had brought with them all the luxuries and prodigalities of Asia. Their residences stood forth against the clear blue sky, or were embossed in woods. They had polished marble balconies and floors, over-hanging orange gardens, courts with cascades of water, shady retreats provocative of slumber in the heat of the day, retiring-rooms vaulted with stained glass speckled with gold, over which streams of water were made to gush; floors and walls were of exquisite mosaic. Here, a fountain of quicksilver shot up in a glistening spray, the glittering particles falling with a tranquil sound like fairy bells; there apartments into which cool air was drawn from the flower gardens, in summer by means of ventilating towers, and in winter through pipes or caleducts embedded in the walls - the hypocaust, in the vaults below, breathing forth volumes of warmed and perfumed air through these hidden passages. The walls were not covered with wainscot but adorned with arabesques. From the ceilings corniced with fretted gold, great chandeliers hung, one of them it is said, was so large that it contained 1804 lamps. Clusters of frail marble columns surprised the beholder with the enormous weight they bore. The boudoirs of ladies were of Verde Antique and encrusted with Lapis Lazuli. Furniture was of sandal and citron wood, inlaid with mother of pearl, ivory or silver, or relieved with gold and precious malachite. In orderly confusion were arranged vases of rock crystal, Chinese porcelain and tables of exquisite mosaic. The winter compartments were hung with rich tapestry, the floors were covered with embroidered carpets. Pillows and couches, of elegant forms, were scattered about the rooms, perfumed with frankincense. The Koranic architect introduced and replaced the religiously prohibited works of arts by the trophies and rarities of the garden. For this reason the earlier Arabs never produced artists. Koran turned them into scientists, men of affairs and soldiers.

Splendid flowers and rare exotics ornamented the courtyards and even the inner chambers. Through pipes of metal, hot and cold water ran to baths of marble; in niches, where the current of air could be artificially directed, hung dripping alcarazzas. There were whispering galleries for the amusement of the ladies; labyrinths and marble playcourts for the children; for the master himself, grand libraries. They had also apart-

ments for the transcribing, binding and ornamenting of books. Taste for calligraphy and splendidly illuminated manuscripts was highly developed. The edifices and public halls were encrusted with gold and pearls having columns of Greeks, Italian, Spanish and African marbles. The residents' motto was:

'*O man! Put not thy trust in this present world.*'

No nation has ever excelled the early Arabs in the beauty and costliness of their gardens in Europe. To them we owe the introduction of very many of our most valuable cultivated fruits, such as the peach, and of cultivation of wheat, rice, sugarcane and cotton. The Arabs introduced in Europe, valuable fruits, vegetables, hydraulic works and artificial lakes in which fish was raised for the table. They also introduced many factories for silk, cotton, linen and all the miracles of the Loom.

To these Muslims, we (Europeans) are indebted for all our personal comforts. Religiously clean, they did not clothe themselves according to the fashion of the native of Europe, in a garment unchanged till it dropped into pieces of itself, a loathsome mass of vermin, stench and rags. No Arab who had been a minister of state, or the associate or antagonist of a sovereign, would have offered such a spectacle as the corpse of Thomas á Becket of Canterbury, when his hair-cloth shirt was removed. They taught us the use of often changed and often washed under-garments of linen or cotton, which still passes among ladies under its old Arabic name. But to cleanliness, they were not unwilling to add ornament. Especially among women of higher classes, was the love of finery a passion. Their outer garments were often of silk, embroidered and decorated with gems and woven gold. In the midst of all these luxuries and splendour which can not be regarded, by the historian with disdain, since in the end these produced most important results in the shape of all-round progress in scientific discoveries, industries, commerce and trade.

Obligations to the Khalifs of the West

Such were the Khalifs of the West: such their splendour, their luxury, their knowledge; such some of the obligations we are under to them – obligations, which Europe, with singular insincerity has ever been fain to hide. The cry against the misbeliever has long outlived the Crusades. Considering the enchanting country over which they ruled, it was not without reason that they caused to be engraved on the public seal: *The servant of the Merciful rests contented in the decrees of God.* What more, indeed, could Paradise give them? But, considering also the evil end of all this happiness and pomp, this

learning, liberality and wealth, we may well appreciate the solemn truth which these monarchs, in their days of pride and power, grandly wrote in the beautiful mosaics on their palace walls, an ever-recurring warning to him who owes dominion to the sword: *There is no conqueror but God.*

The value of a philosophical or political system may be determined by its fruits. On this principle, the Italian system, estimating its religious merit from the biographies of the Popes, which affords the proper criterion. In like manner, the intellectual state of the Mohammedan nations at successive epochs may be ascertained from what is its proper criterion, the contemporaneous scientific manifestation.

At the time when the Arabic influences in Spain began to exert a pressure on the Italian system, there were several scientific writers and scholars, fragments of whose works have descended to us. As an architect may judge the skill of the ancient Egyptian in his art from a study of the Pyramids, so from these relics of Saracenic Muslim learning, we may demonstrate the intellectual state of the Mohammedan people, though much of their work has been lost and more has been purposely destroyed.

A History of The Intellectual Development of Europe
New York - 1875

Muslim Culture

Damascus was renowned for its embroidery of damask figured with gold and for curtains made of spun silk (khazz). Their camel-and goat-hair fabrics as will as their spun-silk cloaks were widely known. Shiraz yielded striped woollen cloaks, also gauzes and brocades. Under the name of 'taffeta' European ladies of the Middle Ages bought in their native shops the Persian silken cloth taftah. Khurasan and Armenia were famous for their spreads, hangings and sofa and cushion covers. In Central Asia, that great emporium of the early Middle Ages, Bukhara was especially noted for its prayer rugs. A complete conception of the development of industry and trade in Transoxiana may be gained from the list of exports from the various towns given by al-Maqdisi: soap, carpets, copper lamps, pewter ware, felt cloaks, furs, amber, honey, falcons, scissors, needles, knives, swords, bows, meats. Tables, lamps, chandeliers, vases, earthenware and kitchen utensils were also made in Syria and Egypt. The Egyptian fabrics termed dimyati (after Dimyat), dabiqi (after Dabiq) and tinnisi (after Tinnis) were world-renowned and imitated in Persia.

The glass of Sidon, Tyre and other Syrian towns, a survival of the ancient Phoenician industry, which after the Egyptian was the oldest glass industry in history, was proverbial for its clarity and thinness. In its enamelled and variegated varieties Syrian glass as a result of the Crusades became the forerunner of the stained glass in the cathedrals of Europe. Glass and metal vases of Syrian workmanship were in great demand as articles of utility and luxury. Sconces of glass bearing enamelled inscriptions in various colours hung in mosques and palaces. Damascus was the centre of an extensive mosaic and qashani industry. Qashani (colloquial qishani, qashi), a name derived from Kashan in Media, was given to square or hexagonal glazed tiles, sometimes figured with conventional flowers and used in exterior and interior decoration of buildings. The predominant colours were indigo blue, turquoise blue, green and less often red and yellow. The art, as ancient as the Elamites and Assyrians, survived in Damascus until the latter part of the eighteenth century.

The paper of Samarqand, which was captured by the Moslems in 704, was considered matchless. Before the close of that century Baghdad saw its first paper-mill. Gradually others for making paper followed: Egypt had its factory about 900 or earlier, Morocco about 1100, Spain about 1150; and various kinds of paper, white and coloured, were produced. Al-Mu'tasim, credited with opening new soap and glass factories in Baghdad, Samara and other towns, is said to have encouraged the paper industry. The oldest Arabic paper manuscript that has come down to us is one on tradition entitled Gharib al-Hadith, by Abu 'Ubayd al-Qasim ibn-Sallam (†837) date dhu al-Qa'dah, A. H. 252 (November 13 - December 12, 866) and preserved in the Leyden University Library. From Moslem Spain and from Italy, in the twelfth and thirteenth centuries, the manufacture of paper finally worked its way into Christian Europe, where with the later discovery of printing from type (1450-55) it made possible the measure of popular education which Europe and America now enjoy.

History of the Arabs
Philip K. Hitti

Koranic Prosperity in the Dark Ages

Koranic Culture was a spontaneous creed practical system based upon a sense of reality springing from and depending upon the personal self. And for 800 years, during the period when the greater part of Europe was submerged in the Dark Ages this Koranic Culture produced the most brilliant scientific progress and the greatest material pros-

perity that had ever been known to man. Precisely 100 years after, some of the Koranic people moved into France (A.D. 731). Frantically assembled European Army attacked and stopped them near Taurus but they remained in France and Spain and other parts of Southwest Europe. The fanatic Europeans looked upon them as followers of the Anti Christ the mystic body of Satan on earth - and the Koranic people regarded the Europeans as crude barbarians.

The Mainspring of Human Progress
The Foundation for Economic Education Inc. – New York

Islam and Progress

Islam is the youngest of all the great revealed religions of mankind. It is also the most modern of them, that is to say, the most advanced and progressive. The question then arises: is there such a thing as progress? And if there is, wherein does it manifest itself? The question has been discussed endlessly. Wilhelm Dilthey, who probably thought more deeply over this problem, comes to the conclusion that, at least, progress of human intelligence and knowledge is a well-established fact. Before him Hegel visualised the history of the world as one process of a steadily advancing consciousness. All progress is, therefore, in the first place rational - a progress of intellect. And it is this rational characteristic which distinguishes Islam. Islam, of all the religions, is by far the most rational; for it demands nothing of you which cannot be brought to agree with the human intellect; nay, it says clearly that all its teachings are necessarily derived from intellect.

Dr. Hugo H. Macros
PhD., Berlin
Genuine Islam
Singapore - 1936

Islam – the Religion of Unity and Strength

And, first, it should be remembered that to say that a religion is stationary, and presents an obstacle to the progress and the innovations and the restless struggles which are the life of the West, is no reproach at all in the eyes of people that is itself stationary and un-progressive. It is precisely this that has enabled it to take such deep hold of all the nations that have accepted it, and to intertwine itself with all their thoughts and feelings. 'A Musalman first and a Turk, an Afghan or an Arab afterwards.' is no mere

formula or figure of speech with that vast assemblage of peoples and of tongues to whom the Prophet of Arabia (peace be upon him), by teaching them to worship the one true God, has given a bond of union stronger than any tie of blood or nation; and that, by means which were nobler and with objects that were higher than those with which Papal Rome is striving, in these latter days, to implant a similar feeling in the Catholic. Sublime and Eternal and Unchangeable as its God, Islam appears to its votaries, a religion worthy at once of the worshipper and of the Being that he worships: and is it for us to say that it is not so?

Lastly, the same travellers who give us as gloomy a picture of the condition of the Ottoman Empire are careful to point out that condition is, in great part, the result of the misgovernment and the corruption of a clique; of elements, in fact, which in great measure have intruded into Islam and are not of it, and is in no respect the result of the religion. On the contrary, it is that religion, which alone gives stability to the tottering fabric, and is the one principle of life amidst all the jarring elements of destruction. It is the religion, which merges all colours, ranks, and races in the consciousness of a common brotherhood. It is the religion, which elevates the mind by drawing it from the Transitory to the Eternal, and which gives to the half-starved or ill-used peasant that courage in calamity, that calm amidst confusion, that ineffable dignity in distress, which is found nowhere but in Islam. Without a Khalif, without a hierarchy, without good schools or teachers, the peasants of Asia Minor still cling to their creed as firmly as ever, and what is more important, to the practical duties enjoined by it. No where in the world - so I heard it stated at a meeting in London the other day for the relief of the Turkish famine, by traveller after traveller who knew the country well, is there more hospitality to strangers, greater self-respect, more personal cleanliness, greater temperance, freer toleration, than amongst them. The one building well cared for everywhere, well built, well whitewashed, well swept, is the village Mosque. The houses of the peasantry may be mere hovels falling into decay for lack of the means to build them up, but each Mosque possesses the niche which points towards the Holy Place, and five times a day does each peasant, at the summons of the village Muezzin, pour forth his heart to God, not so much in petitions for relief of his pressing temporal necessities - for this, be it remembered, is not the characteristic of Musalman prayer but rather a meditation on the Power and the Majesty, the Wisdom and the Mercy of God. Does all this look much like decadence in their religion?

All this may or may not be in our own time; but in a sympathetic study even of Mohammedanism as it is, Christians have not a little to gain. There is the protest against Polytheism in all its shapes; there is the absolute equality of man before God; there is the sense of the dignity of human nature; there is the simplicity of life, the vivid belief in God's providence, the entire submission to His Will; and last, nor least, there is the courage of their convictions, the fearless avowal before men of their belief in God, and their pride in its possession as the one thing needful. There is in the lives of average Mohammedans, from whatever causes, less of self-indulgence, less of the mad race for wealth, less of servility, than is to be found in the lives of average Christians. Truly we may think that these things ought not so to be; and if Christians generally were as ready to confess Christ, and to be proud of being His servants, as Mohammedans are of being followers of Mohammed, one chief obstacle to the spread of Christianity would be removed.

Bosworth Smith
Mohammed and Mohammedanism
London - 1889

In (Islamic) civilisation the chief medium of expression was Arabic and it was dominated by Koran and its outlook on life. It was these two things, their language and Faith, which were the great contributions of the Arab Conquerors to the new and original civilisation of the world.

History of Middle East
Prof. Dr. Bernard Ewts
London University

Muhammad (peace be upon him) needs no other claim to fame than that he raised a barbarous bloodthirsty people out of their diabolical custom to untold advances. His Canon law with its intelligence and wisdom will come to be the world's authority.

Tolstoi

Islam - A Life to be lived

The Islamic belief in God is not a mere article of faith, -a solitary item in a shadowy creed. It is deep rooted and firm. It has been said frequently that Islam possesses the

shortest creed of all the religions of the world, and though this may be the case, so firmly fixed is the Muslim's belief in the Supreme Being that he regards with abhorrence and as blasphemy any attempt to divide in any way the unity of God. Islam is no mere creed: it is a life to be lived. In the Qur-an may be found directions for what are sometimes termed the minor details of daily life, but which are not minor, when it is considered that life has to be lived for God. A Muslim lives for God alone. God is the centre of satisfaction, all hope, all life. The aim of the Muslim is to become God-bound, and to endeavour to advance the knowledge of God in all his undertaking. From the cradle to the grave the true Muslim lives for God and God alone.

Dudely Wright
Genuine Islam
Singapore 1936

American law has only a tenuous connection with moral duty. An American may be accounted a law-abiding citizen even though his inner life is foul and corrupt. But Islam sees the fount of law in the Will of God as revealed to and proclaimed through his apostle Muhammad (Peace be upon him). This law, this Divine Will, treats the entire body of believers as a single society, including all the multifarious races and nationalities which go to make it up in a far-scattered community. This gives religion its true sound force and makes it the cohesive element of society. No bounds of nationality or geography divide, for the government itself is obedient to the one supreme authority of the Koran. This leaves no place for any other legislator; so that no competition or rivalry or rift can arise. The believer regards this world as a vale of soul-making, the ante-room to the next: and the Koran makes perfectly plain what are the condition and laws which govern believers' behaviour to each other and towards society and thus makes the changeover from this world to the next a sure and sound and safe transition.

I also believe that the establishment of with Islam and Islamic laws in America will ultimately work a revolution in our social system, modifying and possibly destroying those three of the great sources of drunkenness, prostitution and marital infidelity; and that when the broad minded liberal thinkers of our country fully comprehend the true character and teachings of Muhammad[S.W] they will give the system he taught more serious and careful attention than they had ever done in the past.

Alexander Russell Webb
Frank Leslie's Weekly, USA - 1893

Law and Society

Among our positive acquisitions from Arab law, there are legal institutions such as a limited partnership (qirad), and certain technicalities of commercial law. But even omitting these, there's no doubt that the high ethical standard of for certain parts of the Arab law acted favourably on the development of our modern concepts; and here in lies its enduring merit.

The Legacy

The Moslems possessed excellent translations of the works of both the Hippocratic corpus and of Galen. All, even the long theoretical explanations of the latter, were well understood and well rendered by such intelligent scholars as Hunayn. But the additions of the Islamic physicians refer almost solely to clinical and therapeutic experience. The theory and the thought of the Greeks were left untouched and treasured up after careful systematization and classification. The glory of Moslem science is in the field of Optics. There the mathematical ability of an Alhazen and Kamal al-Din outshone that of Euclid and Ptolemy. The real and lasting advances stand to their credit in this department of science. The first prominent European man of science who came to Toledo was Adelard of Bath, an English mathematician and philosopher. On the other hand a Spanish Jew converted to Christianity, Petrus Alphonsi, went to England where he became physician to Henry I and spread the science of the Muslims there for the first time. Both scholars translated Arabic astronomical and mathematical works into Latin during the first half of the 12 Century. Many others followed their example.

The influence of the Crusades on the transmission of the Islamic science to Europe was surprisingly little. The foundation of hospitals throughout Europe during the thirteenth century, was partly due to the influence of the Crusades. They may well have been imitations of such splendidly installed Bimaristans as in Damascus and Cairo. The latter institution was much admired by European travelers of later centuries and after a period of decay has seen a renaissance in our time. The Moslems who came in touch with Frank physicians during the Crusades expressed much scorn for their professional skill. This appears for instance from anecdote related by the Syrian prince Usama based on the reports of this Arabic physician Thabit. This man about A.D.1140 observed two cases, which ended fatally owing to the barbarous surgery of a Frank.

In this way hundreds of translations from the Graeco-Arabic literature descended on the barren scientific soil of Europe. The effect was that of a fertilizing rain. In Salerno, under the influence of Constantine's versions, arose a generation of prominent medical

teachers. Anatomy showed signs of revival. Better textbooks of surgery were produced. Gynaecology and obstetrics, hitherto the monopoly of midwives, became the subject of scientific study. Ophthalmology passed from the hands of wandering cataract couchers to those of learned physicians. Universities were established in numbers from the 12th century onwards and became the centers of the new learning. Such were Bologna, Padua, Montpellier, and Paris. Natural science had it for home in the University of Paris. The Aristotelian science as introduced from Toledo with Averroes commentaries was the foundation of learning. Roger Bacon and his scientific opponent Albertus Magnus among others, there expounded the works of the great Moslem scientists. We have already seen how Roger Bacon's Optics was based on Alhazen Thesaurus Opticae. Albert repeated the alchemical teachings of Geber and other Arabic writers in his De Mineralibus. He is original only in his zoological and botanical studies, and even in these he relies greatly on translations from Arabic. The influence of Geber is very pronounced in the encyclopedia Speculum Naturale by Vincent D. Beauvais. The alchemical tracts ascribed to Arnold of the Villanova and to Raymond Lull are full of quotations from Geber. Arabic alchemy associated as it was with astrology, predominated throughout the thirteenth and fourteenth centuries.

In Vienna in 1520, and in Frankfurt in 1588, the medical curriculum was still largely based on Avicenna's Canon and on the ninth Book of Rhazes. Even in the 17th century in France and Germany some scholars kept to Arabic erudition. Arabic pharmacology survived until the beginning of the nineteenth century. Parts of the Latin version of Ibn al-Baytar Simplicia were printed as late as 1758 at Cremona. Looking back we may say that Islamic medicine and science reflected the light of the Hellenic sun, when its day had fled, and that they shone like the moon, illuminating the darkest night of a European Middle Ages; that some bright stars lent their own light. Since they had their share in the direction and introduction of that great movement, it may reasonably be claimed that they are with us yet.

The Arabs have really achieved great things in science: they taught the use of ciphers, and thus became the founders of the arithmetic of every day life; they made algebra an exact science and developed it considerably and laid the foundation of analytical geometry; they were indisputably the founders of the plane and spherical trigonometry which, properly speaking, did not exist among the Greek. In astronomy they made a number of valuable observations. They preserved for us in their translations a number of Greek works, the original of which have been lost: three books of the Conics of

Apollonius, the Spherics of Menelaus, the Mechanics of Hero of Alexandria, the Pneumatics of Philo of Byzantium, a short book on the balance attributed to Euclid and another to Archimedes on the clepsydra-for its services we cannot be too grateful to them. Another reason for our interest in Arab science is the influence it has had in the West. The Arabs kept alive the higher intellectual life and the study of science in a period when the Christian West was fighting desperately with barbarism. The zenith of their activity may be placed in the ninth and tenth centuries, but it was continued down to the fifteenth. From the twelfth century everyone in the West who had any taste for science, some desire for light, turned to the East or to the Moorish West. At this period the works of the Arabs began to be translated as those of the Greeks had previously been by them. The Arabs thus formed a bond of Union, or connecting link between ancient culture and modern civilisation. When at the Renaissance the spirit of man was once again filled with the zeal for knowledge and stimulated by the spark of genius, if it was able to set promptly to work, to produce and to invent, it was because the Arabs had preserved and perfected the various branches of knowledge, kept the spirit of research alive and eager and maintained it pliant and ready for future discoveries.

The scholars, so very different in origin, have however several features in common. Their object was to simplify and make lucid. Without having sufficient genius to make generalization or any great synthesis, they are very good arrangers. They arrange logically. They classify and enumerate, and this simple gift of or orderliness and lucidity is almost sufficient to explain the progress, which they made. Their manner is didactic; they appear to address themselves, not like the Greeks, to some particular amateur or to some Maeccenas interested in learning for its self alone, but rather to all intelligent students. Their books remind one of good secondary or university textbooks. The Arabs were traders, travellers, and lawyers; they had a positive mind, their science is therefore a practical object; an arithmetic had to serve the needs of commerce and the division of estate; astronomy the requirements of travelers and those who cross the desert, or of religion which has to know the hours of prayers, the azimuth of Mecca and the moment of the first appearance of the moon of the Ramadhan.

The Arab is always practical and never becomes lost in reverie. The Arabic language moreover is dry, precise, and recalls somewhat the style of Voltaire in French. It is more suitable for an exact and precise science than for eloquence and poetic flights. It has the further advantage of lending itself readily to the formation of technical terms. The Arabs scholars did not write in verse like the Hindus who composed their algebra

in slokas; they did not propounded historical problems like the Greek; they had no taste for enormous numbers and vast period of time. We do not find among them any kalpa, yoga, or Days of Brahma as among the Hindus, nor names for very high numerals. They were more positive than the Greek themselves who were interested in very large numbers, as we see from Aranius and the cattle-problem of Archimedes and the Great Year of Aristarchus of Samos.

Al-Fazari was the first Muslim to construct an astrolabe. He wrote on the use of the armillary sphere and prepared tables according to the years of the Arabs. Al-Ma'mun had a degree of the meridian measured in the plane of Sinjar by a method different from that of the Greek. At the same time observations were taken at Baghdad and at Jundeshapur. An observatory was established at Baghdad near the Shammasiya gate. Al-Farghani is one of the astronomers of this time who were known to the medieval West. Arithmetic and algebra also flourished along side of astronomy. This was the period of the celebrated al-Khwarizmi, whose name, corrupted by the Latin writers of West, gave us, it is believed, the term algorism (sometimes written as algorithm). The algebra of al-Khwarizmi is lucid and well arranged. The learned Arab al-Biruni in the 10th century says that the numerals came from the most beautiful form of Indian figures. He does not, however, say exactly what this form is nor in what part of India it was in use. It appears on the contrary that the numerals have or simpler and handier form among the Arabs than anywhere else; this must be their original form. We find that the zero was known to the Arabs at least 250 years before it was known in the West. It was not till the twelfth century that Christian arithmeticians began to write treatises on counting with the numerals, without columns, completed by the zero. This method was called algorithm. Now among the Arabs the numerals appear from the first with the zero. These words algebra, cipher, algorithm survive as witnesses of the part played by the Arabs in the foundation and diffusion of the science of calculation.

The Arabs were very skillful in the construction of clepsydras, water-clocks with automata; it will be remembered that Harun al-Rashid sent one as a present to Charlemagne. In the next generation there stands out one of the most illustrious scholars of the East, perhaps the one whom the Latin scholars of the Middle Ages and Renaissance most admired and eulogised, al-Battani (Albategnius). He made his astronomical observations from 264 to 306. He wrote a large treatise and compiled astronomical tables, which show in many respects an advance on the work of all-Khwarizmi and diverge still farther from Indian method. The formulae are explained by al-Battani. This

brings us very far beyond the point reached by the Greeks and really opens the era of modern science.

During these two centuries in which the final form was given to the discoveries which are now at the foundation of all or modern civilisation, a number of powerful minds were dealing with other problems relating to the philosophy of the sciences, and to physical and natural sciences. Without reaching final solutions, they trained the mind, elaborated ideas and prepared the way for future discoveries. Al-Kindi first of the great scholastic , wrote Tom meteorology and optics. His treatise on the rains and the winds and his improved version of Optics of Euclid were translated into Latin. Avicenna and Algazel discuss the question of infinite quantities, sometimes in connection with the religion and sometimes in connection with physics.

Now we come to a scholar who needs no introduction to our readers, for very few authors enjoy such fame: namely the celebrated Omar Khayyam, poet and mathematician. His skill as a geometer is equal to his literary erudition and reveals real logic power and penetration. His Algebra is of book of the first rank and one which represents a much more advanced state of this science than that we see among the Greek.

The Legacy of Islam
Sir Thomas Arnold
Oxford - 1931

Muslims' Quest for Knowledge

Muslim's Love for Knowledge

It is a notable and striking fact, that Greece and Rome, who so completely transformed the world and opened up a new universe of civilisation, did not produce a single practical invention or industrial discovery of any importance. From the early days of Babylon and Egypt there is no new material discovery of importance to record until the introduction of paper, gunpowder, and the mariner's compass by the Arabs. Never before and never since, on such a scale, has the spectacle been witnessed of the ruling classes throughout the length and breadth of a vast empire given over entirely to a frenzied passion for the acquirement of knowledge. Learning seemed to have become with them the chief business of life. Caravans laden with books plied form Bokhara to the Tigris, form Egypt to Andalusia; embassies were sent to Constantinople and to India for the sole purpose of obtaining books and teachers. To every mosque was attached a school; wazirs vied with their masters in establishing public libraries, endowing colleges, founding bursaries for impecunious students. Men of learning, irrespectively of race or religion, took precedence over all others; honours and riches were showered upon them, they were appointed to the government of provinces; a retinue of professors and a camel train of books accompanied the Khalifs in their journeys and expeditions.

Arabian Knowledge

Arabian knowledge began at an early date to percolate into Christian Europe. If there be any ground of fact in the legend of the alchemical pursuits of St. Dunstan, Arabian lore must have been much more widely defused in the 10th century than can be shown by surviving records. Under absolute religious tolerance, Christians enjoyed complete freedom in the Spanish Khalifate; they had their own Bishop; several monasteries existed in outskirts of the capital which served as hostels for travellers, and monks were commonly seen in the streets of Cordova. From all parts of Europe numerous students betook themselves to the great Arab seats of learning in search of the light which only there was to be found. Alvaro, a Cordovan bishop, writes in the ninth century: "all the young Christians who distinguish themselves by their talent, know the language and literature of the Arabs, read and study passionately the Arab books, gathered at great expense great libraries of these, and everywhere proclaim with a loud voice how admirable it is that literature." The famous Gerber of Aurillac brought from Spain some rudiments of astronomy and mathematics, and taught his astonished pupils from terres-

trial and celestial globes. Though his learning was not deep, and it is probably erroneously that he is credited with introducing the decimal notation - he still used the Roman abacus - his clean taste for knowledge "stolen from the Saracen", in William of Malmesbury's words, made him, as pope Sylvester II, the hero of fantastic Faust legends widely popular throughout the Middle Ages.

The Jews shared under the complete tolerance of Moorish rule in the cultural evolution of the Khalifate; and as they scattered over Europe, especially after the Almohadean conquest, became the carriers of that culture to the remotest barbaric lands. We find them freely teaching and discussing with the inmates of secluded monasteries whose curiosity for the strange learning prevailed upon their religious prejudices. French and German monks obtained from them the textbooks of the new sciences; and even literary nuns in Thuringian convents, such as the famous Hildegard and Hroswitha,, did not disdain to avail themselves of their learning. They established numerous schools, such as that of the Kimhis and that of Ben Esra at Narbonne, where Arabian science was popularised and Arabic books translated. Numerous Jews followed William of Normandy to England and enjoyed his protection, building there the first stone burgher houses which may still be seen at the Lincoln and St. Edmundsbury, and establishing a school of science at Oxford; it was under their successors at that Oxford school that Roger Bacon learned Arabic and Arabic science. Neither Roger Bacon nor his later namesakes has any title to be credited with having introduced the experimental method. Roger Bacon was no more than one of the apostles of Muslim science and method to Christian Europe; and he never wearied of declaring that the knowledge of Arabic and Arabian science was for his contemporaries the only way to knowledge. Discussions as to who was the originator of the experimental method, like the fostering of every Arab discovery or invention on the first European who happens to mention it, such as the invention of the compass to a fabulous Flavio Gioja of Amalfi, of alcohol to Arnold of Villeneuve, of lenses and gun powder to Bacon or Schwartz, are part of the colossal misrepresentation of the origin of Europeans civilisation. The experimental method of the Arabs was by Bacon's time widespread and eagerly cultivated throughout Europe; it had been proclaimed by Adelhard of Bath, by Alexander of Neckam, by Vincent of Beauvais, by Arnold of Villeneuve, by Bernard Silvestris, who entitles his manual *Experimentarius*, by Thomas of Cantimpre, by Albertus Magnus.

In the hands of Jewish doctors trained in the Arabs, where medical art had been carried far beyond that of the ancients, the practice and teaching of Medicine remained

throughout the Middle Ages. The pharmacopoeia, created by the Arabs is virtually that which, but for the recent synthetic and or organotherapic preparations, is in use at the present day; our common drugs, such as nux vomica, senna, rhubarb, aconite, gentian, myrrh, calomel, and the structure of our prescriptions, belong to Arabic medicine. The medical school of Montpellier was founded on the pattern of that of Cordova, under the Jew doctors. The example was imitated at Padua and later at Pisa, where together with the Canon of Avicenna (Ibne Sina) and the surgery of Abul Kasim which until the 17th century remained the textbooks of medical science throughout Europe, were taught mathematics and astronomy of the Moors. Those were the nurseries, which were one day to bring forth Fallopius, Vesalius, Cardan, Harvey, Galileo.

The power which had transformed the material and mental world is the product by direct filiation of the science of the astrologers, alchemists, and of the medical schools of the later Middle Ages; and those arose directly and solely as a result of Arabian civilisation. Down to the fifteenth century, whatever scientific activity existed in Europe was engaged in assimilating Arab learning without greatly adding to it

Prince Henry of Portugal established under Arab and Jewish teachers his great nautical Academy at Cape St. Vincent, which prepared the way for Vasco Da Gama, and for the expansion of Europe to the uttermost ends of the earth. The first mathematical treatise printed in Europe (1494) is but a paraphrase and in parts a transcription of Leonard Fibonacci's translations by Luca Pacioli, the friend of another Leonardo – Leonardo da Vinci. It was from Al-Batani's tables that Regiomontanus constructed the Ephemerides which made the voyage of Columbus possible; Kepler carried out his works by means of Hakemite tables of Ibne Yunis; Vesalius translated Al-Razi. The spirit of science passed through the period of the classical Renaissance without being influenced by it, and develop in seclusion, independently of classisizing influences.

The Making of Humanity
Dr. Robert Briffault
London – 1929

The quest for knowledge was not confined to intellectuals only. Even the great kings, courtiers, rich and the wealthy vied with each other in the establishment of an institution for patronage and pursuit of knowledge. Learning had become with them chief business of life. The rulers hurried from their divans to close themselves in their laboratories, libraries and observatories. Never before and never since on such a scale, has

the spectacle been witnessed of the ruling classes given over entirely to a frenzied passion for the acquirement of knowledge. They were not only the patron but also cultivators of many branches of human learning. When a celebrated scholar came to the capital the ruler rode forth to meet him in honour. They themselves were authors of works on literature and science. One of them was himself the author of a work on polite literature in not less than fifty volumes; another wrote a treatise on Algebra. It was considered a great humiliation that a rich person should die without leaving behind any educational institution. Across the Pyrenees, literary, philosophical, and military adventurers were perpetually passing; and thus the luxury, the taste, and above all, the chivalrous gallantry and elegant courtesies of Moslem society found their way from Granada and Cordova to Provence and Languedoc. The French, and German, and English nobles imbibed the Arab admiration of the horse; they learned to pride themselves on skilful riding. Hunting and falconry became their fashionable pastimes; they tried to emulate that Arab skill which had produced the celebrated breed of Andalusian horses. It was a scene of grandeur and gallantry; the pastimes were tilts and tournaments. The refined society of Cordova prided in its politeness.

The Arabian School System

The Arabs established libraries in all their chief towns; it is said that not fewer than seventy were in existence. To every mosque was attached a public school, in which the children of the poor were taught to read and write, and instructed in the precepts of the Koran. For those in easier circumstances there were academies, usually arranged in twenty-five or thirty apartments, each calculated for accommodating four students; the academy being presided over by a rector. In Cordova, Granada, and other great cities there were universities under superintendents – some of them even Jews and Christians. The Mohammedan liberality was in striking contrast with the intolerance of Europe. Indeed, it may be doubted whether at this time any European nation is sufficiently advanced to follow such an example. Almaimon, in a letter to the Emperor Theophilus, expressed his desire to visit Constantinople if his public duties would have permitted. He requests of him to allow Leo the mathematician to come to Baghdad to impart to him a portion of his learning, pledging his word that he would restore him quickly and safely again. "Do not," says the high-minded Khalif, "let diversity of religion or of country cause you to refuse my request. Do what friendship would concede to a friend. In return, I offer you a hundred weight of gold, a perpetual alliance and peace." True to the instincts of his race and the traditions of his city, the Byzantine

sourly and insolently refused the request, saying that, "the learning, which had illustrated the Roman name, should never be imparted to a barbarian."

In the universities some of the professors of polite literature gave lectures on Arabic classical works; others taught rhetoric or composition, mathematics or astronomy. From these institutions many of the practices observed in our colleges were derived. They held Commencements, at which poems were read and orations delivered in presence of the public. They had also, in addition to these schools of general learning, professional ones, particularly for medicine.

With a pride perhaps not altogether inexcusable, the Arabians boasted of their language as being the most perfect spoken by man. It is not then surprising that, in the Arabian schools, great attention was paid to the study of language, and that so many celebrated grammarians were produced. By these scholars, dictionaries, similar to those now in use, were composed; their copiousness is indicated by the circumstance that one of them consisted of sixty volumes, the definition of each word being illustrated or sustained by quotations from Arab authors of acknowledged repute. They had also lexicons of Greek, Latin, Hebrew, and cyclopedias such as the Historical Dictionary of Sciences of Mohammed Ibn Abdallah of Granada.

A History of The Intellectual Development of Europe
New York - 1875

We are assured, on all hands, that the Musalman population has an almost passionate desire for education, and those in the neighbourhood of our colonies would throng our schools, first if the practical education given was more worth having, and, secondly, if the teacher would refrain from needlessly attacking their cherished and often harmless customs. Wherever Mohammedans are numerous, they establish schools themselves; and there are not a few who travel extraordinary distances to secure the best possible education. Mr. Pope Hennessy mentions the case of one young Mohammedan Negro who is in the habit of purchasing costly books from Trubner in London, and who went to Futah, two hundred and fifty miles away, to obtain an education better than he could find in Sierra Leone itself. Nor is it an uncommon thing for newly-converted Musalmans to make their way right across the Desert from Bornu, or from Lake Tahad, or down the Neil from Darfur or Wadai, a journey of over one thousand miles, that they may carry on their studies in El- Azhar, the great collegiate Mosque

at Cairo, and may thence bring back the results of their training to their native country, and form so many centres of Mohammedan teaching and example.

Nor as to the effect of Islam when first embraced by a Negro tribe, can there, when viewed as a whole, be any reasonable doubt. Polytheism disappears almost instantaneously; sorcery, with its attendant evils, gradually dies away, human sacrifice becomes a thing of the past. The general moral elevation is most marked; the natives begin for the first time in their history to dress, and that neatly. Squalid filth is replaced by approach to personal cleanliness; hospitality becomes a religious duty; drunkenness, instead of the rule, becomes a rare exception. Though polygamy is allowed by the Koran, it is not common in practice, and, beyond the limits laid down by the Prophet, incontinence is rare; chastity is looked upon as one of the highest, and becomes, in fact, one of the commoner virtues. It is idleness hence forward that degrades, and industry that elevates, instead of the reverse. Offences are henceforward measured by a written code instead of the arbitrary caprice of a chieftain - a step, as every one will admit, of vast importance in the progress of a tribe. The Mosque gives an idea of architecture at all events higher than any the Negro has yet had. A thirst for literature thus created, and that for works of science and philosophy as well as for commentaries on the Koran.

Nor have the best portion of Mohammed's followers been unworthy of him. The religion which has declared that 'the ink of the learned is as precious as the blood of the martyrs;' and which declares that at the Day of Decision a special account will be given of the use made of the intellect, cannot fairly be accused of obscurantism. It was not so when, during the darkest period of European history, the Arabs for five hundred years held up the torch of learning to humanity. It was the Arabs who then 'called the Muses from their ancient seats;' who collected and translated the writings of the great Greek masters; who understood the geometry of Apollonius, and wielded the weapons found in the logical armoury of Aristotle. It was the Arabs who developed the Algebra and Chemistry; who adorned their cities with colleges and libraries, as well as with mosques and palaces; who supplied Europe with a school of philosophers from Cordova, and a school of physicians from Salerno. When we condemn the Mohammedan wars, let us at least remember what good they brought with them.

Bosworth Smith
Mohammed and Mohammedanism
London - 1889

Had the Arabs been barbarians like the Mongols, who stamp out the fire of learning in the East so effectually that it never recovered, and possibly never will recover, from the loss of its libraries and its literary tradition, the Renaissance in Europe might well have been delayed more than one century. Before the days of printing, the life of a scholar must always have abounded in irritation and disappointment. Until, and even after, the foundation of the Muslim universities in East and West, many a student set out as a matter of course on a journey of a thousand miles or more in quest of a teacher. Vast journeys from Spain to Makkah or from Morocco to Baghdad were undertaken by young man who left their homes practically penniless to sit at the feet of a chosen master.

The School of Toledo

Place-names and common words, which have survived show how the Spanish language was affected by Arabic at the most tender period of its growth. By the 10th century the whole basis of life throughout Spain was profoundly influenced by Islam: with the capture of Toledo that influence spread to the rest of Europe. Since the destruction of Cordova by the Berbers at the beginning of the 11th century, Toledo had gradually become the center of Moslem learning in Spain, and it maintained that position after the Christian conquest in 1085. The court of Alfonso VI, though nominally Christian, was as much imbued with Moslem civilisation as the Court of Frederick II at Palermo nearly two hundred years after, and Alfonso proclaimed himself 'Emperor of the two religions'. The schools of Toledo attracted scholars from all parts of Europe, including England and Scotland. Among them were Robert the English-man, Robertus Anglicus, the first translator of the Qur-an, Michael Scott, Daniel Morley, and Adelard of Bath.

The greatest contribution of the Muslims in Spain to European thought was the work of the philosophers. The great thinkers of Muslim Spain do not belong to the brilliant age of the Kalifate of Cordova, but to the ages of political confusion which followed. They rediscovered Greek philosophy, and above all the works of Aristotle. The historians and the dramatists were apparently unknown to them, but they introduced Aristotle to the West centuries before the revival of Greek scholarship with directly preceded the Renaissance and was one of the causes of the reformation. This seemed hardly ever to have known the Greek texts at first hand or to have translated from them directly; their translations were made as a rule from intermediate versions in Syriac; so that an English or Scottish student, if he wished to become further acquainted with the work of

Aristotle than was possible from the meager Latin versions at their disposal, found it convenient to travel to Toledo and learn to read his Greek authors in Arabic.

Chess is so characteristic a product of the legacy of Islam that it deserves more than a passing mention. Modern European chess is the direct descendant of an ancient game finally borrowed from Islam by Christian Europe.

Contemporary with the Infante Don Juan Manuel and the Archpriest of Hita was the author of the earliest Spanish book of chivalry, the Historia Del Cavallero Cifar, which was probably composed between 1299 and 1335. Like all books of chivalry, it was said to have been taken from a Chaldean (i.e. Arabic) original, and the underlying idea is that of a story in the Arabian Nights, though the detail is a strange mixture of the Golden legend, Arthurian romance, and Oriental fable. The name Cifar is Arabic (safar, a journey; or sifara, an embassy), so that Caballero Cifar is equivalent to a Knight-Errant. His wife is named Grima (Karima, a common name among Moslem women and signifying precious thing, nobly-born, or daughter).

The Legacy of Islam
Sir Thomas Arnold
Oxford – 1931

In the process of transmitting the treasures of Arabic erudition into the West, Toledo, which maintained its position after the Christian conquest in 1085 as an important centre of Islamic learning, acted as the main channel. Here through the initiative of Archbishop Raymond I (1126-51) arose a regular school for translation. In it a series of translators flourished from about 1135 to 1284. Scholars were attracted from various parts of Europe, including the British Isles, whence hailed Michael Scot and Robert of Chester. In 1145 Robert made the first translation of al-Khwarizmi's algebra; in 1143 he had completed with Hermann the Dalmatian for Peter the Venerable the first Latin translation of the Koran. It was also in Toledo that the first school of Oriental studies in Europe was established in 1250, by the Order of Preachers with a view to preparing missionaries to Moslems and Jews

The name of Adelard of Bath, who is said to have visited Spain at this time, is one of the greatest in English science before Roger Bacon. After sojourning in Sicily and Syria Adelard turned into Latin, in 1126 the astronomical tables of al-Majriti, which were based on those of al-Khwarizmi and included tables of sins. He translated a num-

ber of other mathematical and astronomical treatises and became the first of a long line of English Arabists.

By the close of the thirteenth century Arabic science and philosophy had been transmitted to Europe, and Spain's work as an intermediary was done. the intellectual avenue leading from the portals of Toledo through the Pyrenees, wound its way through Provence and the Alpine passes into Lorraine, Germany and Central Europe as well as across the Channel into England. Among the cities of Southern France deserving mention are Marseille, where Raymond in 1140 drew up planetary tables based on those of Toledo; Toulouse, where Hermann the Dalmatian completed in 1143 al-Majriti's translation of Ptolemy's Planisphaerium; Narbonne, where Abraham ben-Ezra translated in 1160 al-Biruni's commentary on al-Khwarizimi's tables; and Montpellier, which in the thirteenth century became the chief centre of medical and astronomical studies in France. In Eastern France Cluny, whose famous abbey housed a number of Spanish monks, was during the twelfth century a significant focus for the diffusion of Arab learning. Its abbot, Peter the Venerable, sponsored (1141-3) the first Latin translation of the Koran, besides various pamphlets directed against Islam. Arabic science, introduced into Lorraine (Lotharingia) in the tenth century, made that region a centre of scientific influence in the following two centuries. Liege, Gorze and Cologne, among other Lotharingian cities, provided the most fertile soil for the germination of Arab learning. From Lorraine it radiated into other parts of Germany and was transported into Norman England by men born or educated in Lorraine. Embassies between German kings in the North and Moslem rulers in Spain were frequent and intellectually fruitful. As early as 953 Otto the Great, king of the Germans, sent as an envoy a Lotharingian monk, John by name, who resided in Cordova for nearly three years. Probably learned Arabic and brought back with him scientific manuscripts. Thus did Spanish Arabic learning permeate all Western Europe.

History of the Arabs
Philip K. Hitti

Science

Founders of Modern Science

That Koranic people and not the Greeks were the inventors of the scientific methods and the founders of the Modern Science. The world remained for a long time under the misunderstanding but the latest researches in the history of Science have rendered the incontrovertible historical truth that the Scientific methods which have made possible the emergency and progress of Modern Science were invented by the Muslim who laid the foundation of Modern research.

In the exultant confidence of its dialectic freedom and suppleness, the Greek mind never developed any consciousness of the sacredness of observed fact. It was abstract. Accuracy of thought meant for it accuracy in the operation of discursive reason, logic; but it never formed any conception of accuracy in the basis of the reasoning process, in the materials and data of thought, in ascertained experience. In the most methodical thinkers of Greece, in Aristotle for instance, we meet with the most astounding carelessness in matters of easiest verification. He states, for instance, that there is only one bone in a lion's neck, that man has eight ribs, that men have more teeth than women, that men only have a beating heart, that female skulls, unlike those of males, have a circular suture, that eggs float on sea-water, that if sea-water be collected in a wax vessel it becomes drinkable. The Greek, in short had no science, and no scientific spirit. It is the science and the scientific spirit which constitutes the distinction between the ancient and the modern worlds.

Science and Renaissance

It was under the influence of the Arabian revival of culture, and not in the fifteenth century, that the real Renaissance took place. Spain, not Italy, was the cradle of the rebirth of Europe. After steadily sinking lower and lower into barbarism, it had reached the darkest depths of ignorance and degradation when the cities of the Saracenic world, Baghdad, Cairo, Cordova, Toledo, were growing centres of civilisation and intellectual activity. It was there that the new life arose which was to grow into a new phase of human evolution,. From the time when the influence of their culture made itself felt, began the stirring of a new life.

The fact has been set forth again and again. But it has been nevertheless stubbornly ignored and persistently minimised. The debt of Europe to the 'heathen dog' could, of course find no place in the scheme of Christian history and the garbled falsification has

imposed itself on all subsequent conceptions The history of the rebirth of Europe is constantly being written without any reference whatsoever, to the influence of Arab civilisation – the history of the Prince of Denmark without Hamlet. It is highly probable that but for the Arabs, modern European civilisation would never have arisen at all; it is absolutely certain that but for them, it would not have assumed that character which has enabled it to transcend all previous phases of evolution. For although there is not a single aspect of European growth in which the decisive influence of Islamic culture is not traceable, nowhere it is so clear and momentous as in the genesis of that power which constitutes the paramount distinctive force of the modern world and the supreme source of its victory – natural science and the scientific spirit.

It has been objected that Arab astronomy did not forestall Coernicus or Newton, though without it there would have been no Coernicus and no Newton. Although the complexity of the Ptolemaic system was repeatedly criticised by Moslem astronomers, although Al-Zarkyal declared the planetary orbits to be ellipses and not circles, although the orbit of Mercury is in Al-Farani's tables actually represented as elliptical, although Muhammad Ibn Musa glimpsed in his works on Astral Motion and the Force of Attraction, although At-Batani discovered the movements of sun's apogee, although Abul Wafa discovered the secondary variation of the moon's motion, although Ibn Sina is said to have employed an air thermometer and although Ibn Yunis certainly did use the pendulum for the measurement of time, all that is entirely beside the point.

The debt of our science to that of the Arabs does not consist in startling discoveries or revolutionary theories; science owes a great deal more to Arab culture, it owes its existence. What we call science arose in Europe as a result of a new spirit of inquiry, of new methods of investigation, of the method of experiment, observation, measurement, of the development of mathematics in a form unknown to the Greeks. That spirit and those methods were introduced into the European world by the Arabs. The same objective and quantitative spirit is manifested in all their activities. When Al-Mamun ordered his post-master, Ibn Khurdadbeh, to draw up an account of his dominions and of all the sea and land routes in use – the first of those numerous geographical works of the Arabs which opened a new view of the world and a new geography – he insisted that each place should be localised by accurately determined longitudes and latitudes. Al-Byruny travelled forty years to collect mineralogical specimens; and his tables of specific weights obtained by differential weighing are found to be correct. Ibn Baitar collected botanical specimens for the whole Muslim world and compared the floras of

India and Persia with those of Greece and Spain: his work describing 1,400 plants is pronounced by Meyer 'a monument of industry'. Contrast that spirit of scientific minuteness and perseverance in observation with the speculative methods of the ancients who scorned mere empiricism; with Aristotle who wrote on physics without performing a single experiment, and on natural philosophy without taking the trouble of ascertaining the most easily verifiable facts, who calmly states that men have more teeth than women, while Galen, the greatest classical authority on anatomy, informs us that the lower jaw consists of two bones, a statement accepted unchallenged till Abd al-Letif takes the trouble to examine human skulls.

While the highest mathematical knowledge of the Christian West did not extend beyond a laboured use of the rule of three, and the simplest operations of arithmetic were performed by means of the abacus – the same device of wires and beads that is used in our Kindergartens – the Arabs perfected the decimal system of notation by introducing the use of the cipher or zero (Ar. zirr); they created Algebra and carried it to the solution of equations of the fourth degree, and trigonometry, substituting sines and tangents for the chord of the Greeks, and thus multiplied a thousand-fold the powers of human inquiry. Not only did the Arabs create those mathematics which were to be the indispensable instrument of scientific analysis, they laid the foundation of those methods of experimental research which in conjunction with mathematical analysis gave birth to modern science.

Science is the most momentous contribution of Arab civilisation to the modern world, but its fruit was slow in ripening. Not until long after Moorish culture had sunk back into darkness did the giant to which it had given birth rise in his might. It was not science, which brought Europe back to life. Other and manifold influences from the civilisation of Islam communicated its first glow to European life.

The coast towns of Catalonia and Provence were the first to rise in importance and to life through trade with the Arabs. The cities of Southern Italy next followed: Amalfi, Salerno, Naples and Geata, rising gradually to wealth and freedom through commerce with their Muslims neighbours of Sicily, and gradually extending their connections in conjunction with Arab traders to Africa and Syria. The emperor Ludwig II accuses Naples of being as Mohammedan as Palermo. Amalfi and the first Italian free cities of Southern Italy entered into alliance with the Muslims of Sicily and actually assisted them when they advanced to the gates of Rome, defying the excommunications of

Pope John VIII. When the Crusade was moved against Islam, they refused to bear arms against the people who had helped them to wealth and greatness.

The Making of Humanity
Dr. Robert Briffault
London – 1929

Astronomy, Mathematics, Physics and Chemistry

Thus the intellectual achievements of the Koranic people were far superior to any in Christian Europe before the twelfth century. In no subject were the Moslems farther advanced than in science. In fact, their achievements in this field were the best the world had seen since the end of the Hellenistic civilisation. Moslems were brilliant astronomers, mathematicians, physicists, chemists, and physicians. Despite their reverence for Aristotle, they did not hesitate to criticise his notion of a universe of concentric spheres with the earth as its center, and they admitted the possibility that the earth rotates on its axis and revolves around the sun. Their celebrated poet, Omar Khayyam, developed what was probably the most accurate calendar ever devised by the mind of man. It seems to have contained an error of only one day in 3770 years, as compared with an error of one day in 3330 years in the Gregorian calendar, which is now in use in the Western world. The Moslems were capable mathematicians and developed algebra and trigonometry. Moslem scientists founded the science of optics and drew a number of significant conclusions regarding the theory of magnifying lenses and velocity, transmission, and refraction of light. As a result of innumerable experiments by Moslem Chemists and Alchemists alike, numerous new substances and compounds were discovered; among them carbonate of soda, alum, borax, bichloride of mercury, nitrate of silver, saltpetre, and nitric and sulphuric acids. Moslem scientists were first to describe the chemical process of distillation, filtration and sublimation.

Western Civilisations - Their History and Their Culture
Edward McNall Burns – 1941

Arabic Fine Technology and its Influence on European Mechanical Engineering

By fine technology we mean those types of machines or instruments that are designed to give pleasure to courtly circles, or for time keeping or for the use of scientists (mainly astronomers). Fine technology is thus distinguished from utilitarian technology, which is concerned with machines such as mills, water-raising devices and textile

machinery. These are essential to the economic prosperity of society but are very much simpler technically than the constructions of fine technology. In Arabic, although there are a number of treatises, there are only two writers of major importance. The first of these was Ahmad, one of three brothers known as Banu Musa. Above all, they were erudite scientists and engineers in their own right. About 20 works are attributed to the brothers. One is a mathematical treatise that exists only in a Latin translation, the second is the book of ingenious devices by Ahmad, and the third is the description of a musical automaton that we should have occasion to refer to later.

The most important of these works, however, is undoubtedly the book of ingenious devices. About 80 of the devices described in it are trick vehicles of various kinds, and the remainder include fountains, lamps, a gas mask for use in polluted wells and a campshell grab. Despite the apparent triviality of many of the devices, Ahmad's mastery of aerostatic and hydrostatic pressures and his use of automatic controls and switching systems places him well in advance of his Hellenistic predecessors. Indeed, his work in this field, though limited in scope, was not surpassed until modern times.

The great machine book of Ibn al-Razzaz al-Jazari was completed in Diyar Bakr in 602/1206. This is certainly the most important of the Arabic treatises and probably the most important engineering document from any cultural area before the Renaissance. Several of the machines, mechanisms and techniques that appear for the first time in al-Jazari's work were later to enter the vocabulary of European mechanical engineering. The work is also important because al-Jazari described his methods of manufacture and construction with avowed purpose of enabling later craftsmen to reconstruct his machines. Indeed, several have been successfully reconstructed by the modern craftsmen using his instructions and illustrations. Detailed instructions and specifications are very rarely found in the mechanical treatises; in fact from this aspect al-Jazari's work is almost unique before modern times. Other writers were usually unable to give clear instructions either because they had little practical experience or because they did not wish to reveal all the secrets of their profession.

Science and Medicine

The treasure-houses of Islamic science are just beginning to be opened. In Constantinople alone there are more than 80 Mosque libraries containing tens of thousands of manuscripts. In Cairo, Damascus, Mosul, and Baghdad, as well as in Persia and India

are there other collections. Few have been listed much less described or edited. Even the catalog of the of Escorial library in Spain, which contains a large part of the wisdom of Western Islam, is not yet complete. During the last few years, the mass of material recovered has gone far to subvert our former conception and has thrown a flood of new light on the early history of scientific thought in the Islamic world. Thus at present even an outline of the medical and scientific achievements of Islam can, at best, be but tentative. The rich and flexible tongue of Arabia was destined to become the scientific medium of the Near East, just as Latin grew into a medium of scientific understanding in the West. By the time the Arabs had penetrated into the Byzantine and Persian empires, Greek science had for centuries ceased to be a living force. When the Arabs overran North Africa and Western Asia they left the Byzantine and Persian administrative and scientific institutions almost untouched. The Academy of Jundeshapur continued as the scientific center of the new Islamic empire.

The rise of the Abbasids about 750 inaugurated the epoch of greatest power, splendour, and prosperity of Islamic rule. At the very dawn stands the figure of a Moslem whose shadow lies athwart the science of the Middle Ages in the Orient as in the Occident. Jabir ibn Hayyan called as-Sufi (that is the mystic), the Geber of medieval Latin literature. During the reign of the Caliph Al-Ma'mun (813-33) the new learning reached its first climax. The monarch created in Baghdad a regular school for translation. It was equipped with a library. One of the translators there was Hunayn ibn Ishaq, a particularly gifted philosopher and physician of wide erudition, the dominating figure of this century of translators. We know from his own recently published Missive that he translated practically the whole immense corpus of Galenic writing. This amounted to a hundred Syriac, and thirty-nine Arabic versions Galen's medical and philosophical books. Hunayn's predilection for the scholastic turn in Galen's theories is everywhere apparent. It was Hunayn who gave Galen his supreme position in the Middle Ages in the Orient, and indirectly also in the Occident. Hunayn's own compositions are nearly as numerous as his translations.

Recently a pandect ascribed to Thabit Ibn Qurra was published at Cairo. It is divided into 31 sections. The subjects treated are hygiene, hidden and general diseases; then comes a section occupying the bulk of the work-on diseases of from the head, down through the breast, stomach, and intestines to the extremities; then follows a discussion on infectious diseases, among which are small pox and measles; and here also poisons find a place; next is an account of climate, then of fractures and dislocation, then of

food stuff and diet, and last in the of matters of sex. The exposition of each disease, its causes, symptoms, and treatment, is given in it clear and succinct language. In physics al-Kindi is the most frequently named scholar. No less than 265 works are ascribed to this philosopher of the Arabs. Of these at least 15 are on meteorology, several are on specific weight, tides, optics and notably on the reflection of light, and eight are on music. His Optics, preserved in a Latin translation, influenced Roger Bacon and other Western men of science.

The technical arts were rapidly developing in Mesopotamia and Egypt, their irrigation works and canals for water supply and accommodations were created. Theoretical mechanics roused much interest, and many books on elevation of water, water-wheels, on balances and on water-clocks were written. Many Islamic writers composed books on stones particularly precious stones, which form a special genre, the lapidary, afterwards both translated and imitated in the West. In medicine, in place of pandects compiled from antique sources, we find imposing encyclopedic works in which the knowledge of former generations is carefully classified and set against that of the moderns. The first and surely the greatest of the writers of this new school is al Razi, the author known to the Latin West as a Rhazes. He was undoubtedly the greatest physician of the Islamic world and one of the great physicians of all time. his erudition was all-embracing and his scientific output remarkable, amounting to more than two hundred works half of which are medical. The greatest medical work of Rhazes, and perhaps the most extensive ever written by a medical man, is his al-Hawi i.e. a comprehensive book, which includes indeed Greek, Syriac, and the early Arabic medical knowledge in their entirety. This greatest work of Rhazes was propagated in numerous manuscripts during the following centuries. It was repeatedly printed from 1486 on wards. By 1542 there had appeared five editions of this vast and costly work, besides many more of various parts of it. Its influence on European medicine was thus very considerable.

On the practical side, Jabir described improved methods for evaporation, filtration, sublimation, melting, distillation, and crystallization. He described the preparation of many chemical substances. Several technical terms have passed from Jabir's Arabic writings through Latin to the European languages. A full appreciation of Jabir's merits in chemistry will only be possible when the bulk of his chemical writings have been published, particularly his great 'Book of the Seventy'.

Abu Ali al-Hussain ibn Sina, known universally to the West as Avicenna, was one of the greatest scholars of the Islamic world, though less remarkable as a physician than as a philosophers and physicist. Nevertheless his influence on European medicine has been overwhelming. His gigantic Canon of Medicine (al -Qanun fit-Tibb), which is the culmination and masterpiece of an Arabic systematization. This medical encyclopedia deals with general medicine, simple drugs, diseases affecting all parts of the body from the head to the feet, special pathology and the pharmacopoea. The demand for it may be gleaned from the fact that in the last 30 years of the fifteenth century it was issued 16 times-15 editions being in Latin and one in Hebrew, and that it was reissued more than 70 times during the sixteenth century. These figures do not include editions of parts of the work.

The Muslim known to the Latins as Abulcasis was like wise court-physician in Cordova. His name is associated with a great Medical Vade Mecum (at-Tasrif) in 30 sections, the last of which deals with surgery. His work contained illustrations of instruments which influenced other Arabic authors and especially helped to lay the foundations of surgery in Europe. It was early translated into Latin, Provencal, and Hebrew. The celebrated French surgeon Guy de Chauliac appended the Latin portion to one of his works.

Abu Rayhan al-Biruni called the Master (al-Ustad), a Persian, physician, astronomer, mathematician, physicist, geographer, and historian, is perhaps the most prominent figure in the phalanx of those universally learned Moslem scholars who characterize the golden age of Islamic science. In physics his greatest achievement is the exact determination of the specific weight of 18 precious stones and metals. Important information could certainly be obtained from his unedited works on the origin of Indian and Chinese stones and drugs which appear early in Arabic scientific works.

Al-Mas'udi is in a restricted sense the Pliny of the Arabs. In his Meadows of Gold, he described an earth quake, the waters of the Dead Sea, and the first wind mills, which are perhaps an invention of the Islamic peoples, and he also gives what has been described as the rudiments of a theory of evolution.

Optics was developed to its highest degree by Abu Ali al-Hasan ibn al-Haytham (Alhạzen) of Basra. His main work is his Optics. Alhazen opposes the theory of Euclid and Ptolemy that the eye sends out visual rays to the object of vision. He discusses the propagation of light and colors, optic illusion and reflection, with experiments for

testing the angles of incidence and reflection. His name is still associated with the so-called Alhazen's problem. It leads to an equation of the fourth degree, which Alhazen solved by use of a hyperbola. Alhazen examines also the refraction of light rays through transparent medium (air, water). In detailing his experiments with spherical segments, he comes very near to the theoretical discovery of magnifying lenses, which were made practically in Italy three centuries later whilst more than six centuries were to pass before the law of sines was established by Snell and Descartes. Roger Bacon (thirteenth century) and all medieval western writers on Optics, notably the Pole Witelo or Vitellio, based their optical works largely on Alhazen's Opticae Thesaurus. His work also influenced Leonardo da Vinci and Johann Kepler.

Alhazen left several minor writings on physical Optics, among them one on light and the other on twilight phenomena. Others of his treatises deal with rainbow, the halo, and with spherical and parabolic mirrors. On the basis of his calculations he constructed such mirrors of metal. Most of these works were the product of the last ten years of Alhazen's life, as was his fundamental study on the Burning Glass, in which he created a dioptric far superior to that of the Greeks. The work exhibits a profound and accurate conception of the nature of focusing, magnifying, and in version of image, and of formation of rings and colors by experiment. Alhazen wrote moreover a commentary on optical works of Euclid and Ptolemy, the physics of Aristotle, and on the Aristotelian Problemata. He observed the semi-lunar shape of the image of the sun during the eclipse is on a wall opposite a fine hole made in the window-shutters - the first record of the camera obscura. We may glance at the scientific institutions during this golden age of Islamic science. Hospitals were early founded, probably on the models of the old and celebrated academies-hospitals of Jundeshapur. We have authentic information concerning at least thirty-four such institutions. There were distributed throughout the Islamic world, from Persia to Morocco, from northern Syria to Egypt. A report from Spain says that a physician at Cadiz installed in the parks of the Governor a botanical garden in which he cultivated rare medicinal plants brought back from his travels.

Sciences other than medicine were mostly taught in Mosques. In the early centuries of Islam these were liberally placed at the disposal of scholars. There are also record of academic libraries founded by caliphs, princes, and other prominent men. Every important Mosque had and still has its library not only of theological but also of philosophical and scientific works. We have already mentioned the House of Wisdom cre-

ated in Baghdad by the caliph al-Ma'mun. His nephew al-Mutawakkil followed his example, as did many grandees of his court. In Cairo the Fatimid caliph al-Hakim founded the House of Science, the budget of which is known exactly. A collection of simple drugs was composed by Ibn al-Baytar, who collected plants and drugs on the Mediterranean littoral, from Spain to Syria, described more than 1400 medicinal drugs, and compared them with the records of more than 150 ancient or the Arabian authors. It is a work of extraordinary erudition and observation, and is the greatest of the Arabic books on botany. Many of the old and complicated recipes of these books passed into the European dispensaries. Several names of remedies came thus to the West from the East.

The Moorish physician Ibn Khatima wrote the book on the plague which ravaged Almeria in Spain in 1348-9. This treatise is far superior to all the numerous plague tracts edited in Europe between the fourteenth and the sixteenth century. To appreciate the teaching of these writers it must be remembered that the doctrine of the contiguous character of disease is not emphasised by the Greek physicians and is almost passed over by most medieval medical writers. The many cosmographical encyclopedias of the Arabs and Persians all contain sections on animals, plants, and stones. The best known is that of Zakariyya al-Qazwini still imperfectly edited. Many manuscripts of this work are beautifully illustrated. There exists a considerable number of books and sections of an encyclopedia dealing with the subject of physics, most of them from a philosophical point of view.

Meteorological studies were much in favor with the Muslims or the later century, particularly those on balances. Al-Khazini left a voluminous book, the Balance of Wisdom, of which parts only have been edited. His work comprises, moreover, valuable remarks on specific gravity and the specific weight of alloys. Khazini also dealt with the problem of the greater density of water when nearer to the center of the earth, shortly before Roger Bacon propounded and proved the same hypothesis.

Very fine manuscripts, full of good illustrations, exist on hydrostatic automatons and on clocks, particularly such as were moved by water, mercury, weights, or burning candle. Al-Jazari finished, in 1206, in Mesopotamia, a great book on mechanics and clocks, the best extant in this Arabic world. Prominent in Optics was the Persian Kamal ad-Din. He repeated and improved on Alhazen's experiment with the camera obscura. He also observed the path of the rays in the interior of the glass sphere in order

to examine the refraction of sunlight in raindrops. This led him to an explanation of the genesis of the primary and secondary rainbows.

The Legacy of Islam
Sir Thomas Arnold
Oxford - 1931

Moslems' Taste for Practical Science

It was, doubtless, a similar necessity, arising from their position that stamped such a remarkably practical aspect of the science of the Arabs generally. Many of their learned men were travellers and voyagers, constantly moving about for the acquisition or diffusion of knowledge, their acquirements being a passport to them wherever they went, and a sufficient introduction to any of the African or Asiatic courts. They were thus continually brought in contact with men of affairs, soldiers of fortune, statesmen, and became imbued with much of their practical spirit. The scope of their literary labours offers a subject well worthy of meditation; in contrast with the contemporary ignorance of Europe. Some wrote on chronology; some on numismatics; some wrote on pulpit oratory; some on agriculture and its allied branches, as the art of irrigation. Not one of the purely mathematical, or mixed, or practical science was omitted. Out of a list too long for detailed quotation, I may recall a few names: Assamh, who wrote on topography and statistics; Avicenna, the great physician and philosopher; Averroes of Cordova, the chief commentator on Aristotle. To him is ascribed the discovery of spots on the sun. Abu Uthman wrote on zoology; Alberuni, on gems – he had travelled to India to procure information; Rhazes, Al Abbas, and Al Beithar, on botany – the latter had been in all parts of the world for the purpose of obtaining specimens. Ebn Zoar, better known as Avenzoar, may be looked upon as the authority in pharmacy. His pharmacopoeias were published by schools. To them may be traced the introduction of many Arabic words, such as syrup, julep, elixir, still used among apothecaries. A competent scholar might furnish not only an interesting, but valuable book, founded on the remaining relics of the Arab vocabulary; for in whatever direction we may look, we meet, in the various pursuits of peace and war, of letters and of science, Moslem vestiges. Our dictionaries tell us that such is the origin of admiral, alchemy, alcohol, algebra, chemise, cotton and hundreds of other words. The Moslems commenced the application of chemistry, both to the theory and practice of medicine, in the explanation of the functions of the human body and in the cure of its diseases. Nor was their surgery behind their medicine. Abulcasis, of Cordova, shrinks not from performance

of most formidable operations in his own and in the obstetrical art: the actual cautery and the knife are used without hesitation. He has left ample description of the surgical instruments then employed; and from him we learn that, in operations on females, in which considerations of delicacy intervened, the services of properly instructed women were secured. How different was all this from the state of things in Europe: the Christian peasant, fever-stricken or overtaken by accident, hurried to the nearest saint-shrine and expected a miracle; the Moslem relied on the prescription or lancet of his physician or the bandage and knife of his surgeon.

Review of the Works of Al-Hazen

Among such writers is Al-Hazen; his date was about A.D. 1100. It appears that he lived in both Spain and Egypt. Through his optical works, which have been translated into Latin, he is best known to Europe.

Theory of Vision. He was the first to correct the Greek misconception as to the nature of vision, showing that the rays of light come from external objects to the eye, and do not issue forth from the eye and impinge on external things, as up to his time, had been supposed. His explanation does not depend upon mere hypothesis or supposition, but is plainly based upon anatomical investigation as well as on geometrical discussion.

Function of the Retina. He determines that the retina is the seat of vision, and that impressions made by light upon it are conveyed along the optic nerve to the brain. Though it might not be convenient at the time when Al-Hazen lived, to make such an acknowledgement, no one could come to these conclusions, nor indeed, know anything about these facts, unless he had been engaged in the forbidden practice of dissection.

Single Vision. With felicity he explains that we see single when we use both eyes, because of the formation of the visual image on symmetrical portions of the two retinas. To the modern physiologist the mere mention of such things is as significant as the occurrence of an arch in the interior of the pyramid is to the architect. But Al-Hazen shows that our sense of sight is by no means a trustworthy guide, and that there are illusions arising from the course which the rays of light may take when they suffer refraction or reflexion. It is in the discussion of one of these physical problems that his scientific greatness truly shines forth.

Course of the Ray of Light through the Air. He is perfectly aware that the atmosphere decreases in density with increase of height; and from that consideration he shows

that a ray of light, entering it obliquely, follows as curvilinear path which is concave toward the earth; and that, since the mind refers the position of an object to the direction in which the ray of light from it enters the eye, there must be an illusion as respects the starry bodies; they appear to us, to use the Arabic term, nearer to the Zenith than they actually are, and not in their true place.

Astronomical Refraction. We see them in the direction of the tangent to the curve of refraction as it reaches the eye. Hence also he shows that we actually see the stars, sun and the moon before they have risen and after have set, a wonderful illusion! He shows that in it's passage through the air, curvature of a ray increases with the increasing density, and that its path does not depend on vapours that per chance happen to be present, but on the variation of density in the medium.

The Horizontal Sun and Moon. To this refraction, he truly refers the shortening; in their vertical diameter, of the horizontal sun and moon; to its variations he imputes the twinkling of the fixed stars. The apparent increase of size of the former bodies when they are in the horizon, he refers to a mental deception, arising from the presence of intervening terrestrial objects.

Twilight. He shows that the effect of refraction is to shorten the duration of night and darkness by prolonging the visibility of the sun, and considering the reflecting action of the air, he deduces, that beautiful explanation of the nature of twilight - the light that we perceive before the rising and after the setting of the sun- which we accept at the present time as true.

Height of the Atmosphere. With extraordinary acuteness, he applies the principles with which he is dealing, to the determination of the height of the atmosphere, deciding that its limit is nearly 58.5 miles. All this is very grand, shall we compare it with the contemporaneous monk miracles and monkish philosophy of Europe? It would make a profound impression if communicated for the first time to a scientific society in our own age. Nor perhaps does his merit end here.

The weight of the Air. In the Book of the Balance of Wisdom, for a translation of which we are indebted to M. Khanikoff, the Russian Consul General at Tabriz, he offers us evidence of a singular clearness in mechanical conception for which we should scarcely have been prepared, and indisputably shows the scientific acquirements of his age. In that book he plainly sets forth the connexion between the height of the atmosphere and its increasing density. The height of the atmosphere was therefore understood long before Torricelli.

Hydrostatics. Al-Hazen shows that a body will weigh differently in a rare and in a dense atmosphere: that its loss of weight will be greater in proportion as the air is more dense. He considers the force with which plunged bodies will rise through heavier media in which they are immersed, and discusses the submergence of floating bodies, as ships upon the sea.

Theory of the Balance. He understands the doctrine of the centre of gravity. He applies it to the investigation of balances and steelyards, showing the relations between the centre of gravity and the centre of suspension - when those instruments will set and when they will vibrate. He discovers gravity as a force; asserts that it diminishes with the distance.

Hydrometer. He knew correctly the relation between the velocities, spaces, and times of falling bodies and had very distinct ideas of capillary action. He improved the construction of that old Alexandrian invention, the hydrometer.

Table of Specific Gravities. The determinations of the densities of bodies, as given by Al-Hazen, approach very closely to our own. In the case of mercury they are more exact than some conclusions of the last century. We join, as doubtless, all natural philosophers will do, in the pious prayer of Al-Hazen that, in the Day of Judgement, the All-Merciful will take pity on the soul of Abur Raihan, because he was the first of the race of men to construct a table of specific gravities; and we will ask the same for Al-Hazen himself, since he was the first to trace the curvilinear path of a ray of light through the air.

Development of Organism. Though more than seven centuries part him from our times, the physiologists of this age may accept him as their compeer, since he received and defended the doctrine now forcing its way, of the progressive development of animal forms. He upheld the affirmation of those who said that man, in his progress, passes through a definite succession of states; NOT, however that, "He was once a bull, and was then changed to an ass, and after wards into a horse, and after that into an ape, and finally became a man."

The Works of Ebn Junis

The Arabians, with all this physical knowledge knew the great importance of temperature measures, employing the aerometer for that purpose. They had also dated the variation in density of liquids by heat. In their measures of time they were more successful; they had several kinds of clepsydras. A balance clepsydra is described in the

work from which I am quoting. But it was their great astronomer, Ebn Junis, who accomplished the most valuable of all chronometric improvements.

The Pendulum Clock. Ebn Junis first applied the pendulum to the measure of time. Laplace, in the fifth note to his Systeme du Monde, avails himself of the observations of this philosopher, with those of Albategnius and other Arabians, as incontestable proof of the diminution of the eccentricity of the earth's orbit.

Astronomical Works. He states, moreover, that the observation of Ebn-Junis of the obliquity of the ecliptic properly corrected for parallax and refraction, gives for the year A.D. 1000, a result closely approaching to the theoretical. He also mentions another observation of Ebn Junis (23 Oct, 1007 A.D.) as of much importance in reference to the great inequalities of Jupiter and Saturn.

The Arab Numerals. I have already remarked that, in the writings of this great Arabian, the Arabic numerals and our common arithmetical process are currently used. From Africa & S. Europe they passed into Italy, finding ready acceptance among commercial men, who recognised at once their value, and as William of Malmesbury says, being a wonderful relief to the "Sweating calculators", an epithet, whose correctness will soon appear to any one who will try to do a common multiplication or division problem by the aid of the old Roman numerals. It is said that Gerbert - Pope Sylvester - was the first to introduce a knowledge of them into Europe; he had learned them at the Mohammedan University of Cordova. It is in illusion to the cipher, which follows the 9, but which, added to any of the other digits, increases by tenfold its power, that in a letter to his patron, the Emperor Otho III, with humility he playfully but truly says, "I am like the last of all the numbers."

When the Koranic people took over Egypt, their love of learning science and philosophy soon manifested itself in full energy from the banks of the river Euphrates to those of river Guadalquivir.

Great Improvements in Arithmetic

From the Indians, the Arabs learned Arithmetic, that valuable invention termed by us the Arabic numerals, but honourably ascribed by them its proper source, under the designation of 'Indian numerals.' They also entitled their treatise on the subject 'System of Indian Arithmetic.' Their admirable invention of notation by nine digits and cipher occasioned a complete revolution in arithmetical computations. As in the case of so many other things, the Arab impress is upon it; our word cipher, and its derivatives,

ciphering, etc., recall the Arabic word tsaphara or ciphra, the name for the 0, and meaning that which is blank or void. Muhammad Ben Musa, said to be the earliest of the Moslem authors on algebra, and who made the greatest improvement of substituting sines for chords in trigonometry, wrote also on this system. Ebn Junis A.D. 1008, used it in his astronomical works. From Spain, it passed into Italy, its singular advantage in commercial computation causing it to be adopted in the great trading cities. We still use the word algorithm in reference to calculations. The study of algebra was intently cultivated among the Arabs, who gave it the name it bears. Ben Musa, just referred to, was the inventor of the common method of solving quadratic equations. In the application of mathematics to astronomy and physics they had been long distinguished.

Astronomical Discoveries

Almaimon had determined with considerable accuracy the obliquity of the ecliptic. Almaimon had also ascertained the size of the earth form the measurement of a degree on the shore of the Red Sea – an operation implying true ideas of its form, and in singular contrast with the doctrine of Constantinople and Rome. While the latter was asserting, in all its absurdity, the flatness of the earth, the Moslems were teaching geography in their common schools from globes.

Among problems of interest that were solved may be mentioned the determination of the length of the year by Albategnius and Thebit Ben Corrah; and increased accuracy was given to the correction of astronomical observations by Alhazen's great discovery of atmospheric refraction. Among the astronomers, some composed tables; some wrote on the measure of time; some on the improvement of clocks, for which purpose they were the first to apply the pendulum; some on instruments, as the astrolabe. The introduction of astronomy into Christian Europe has been attributed to the translation of the works of Muhammad Fargani. In Europe, also, the Arabs were the first to build observatories; the Giralda, or tower of Seville, was erected under the superintendence of Geber, the mathematician, A.D. 1196, for that purpose.

A History of The Intellectual Development of Europe
New York - 1875

Astronomy and Geography

In connection with his Bayt al-Hikmah, al-Ma'mun erected at Baghdad near the Shammasiyah gate an astronomical observatory under the directorship of a converted

Jew, Sind ibn-'Ali, and Yahya ibn-abi-Mansur (†830 or 831). Here the caliph's astronomers not only made systematic observation of the celestial movements, but also verified with remarkably precise results all the fundamental elements of the Almagest: the obliquity of the ecliptic, the precession of the equinoxes, the length of solar year, etc. To his observatory al-Ma'mun soon added another on Mt. Qasiyun outside of Damascus. The equipment in those days consisted of quadrant, astrolabe, dial and globes. Ibrahim al-Fazari (†ca. 777) was the first Moslem to construct an astrolabe, as the Arabic name (asturlab) indicates. One of the earliest Arabic treatises on this instrument was written by 'Ali ibn-Isa al-Asturlabi (maker of astrolabes), who flourished in Baghdad and Damascus before 830.

Al-Ma'mun's astronomers performed one of the most delicate geodetic operations - the measuring of the length of a terrestrial degree. The object was to determine the size of the earth and its circumference on the assumption that the earth was round. The measurement carried out in the plain of Sinjar North of the Euphrates and also near Palmyra, yielded 56 2/3 Arabic miles as the length of degree meridian - a remarkably accurate result, exceeding the real length of the degree at that place by about 2877 feet. This would make the circumference of the earth 20,400 miles and its diameter 6500.

Of the Saljuq sultans, Jalal-al-Din Malikshah patronized astronomical studied. He established in 467 (1074-5) at al-Rayy or at Naysapur, an observatory where there was introduced into the civil calendar an important reform based on an accurate determination of the length of the tropical year. To this task of reforming the old Persian calendar he called to his new observatory the celebrated 'Omar al-Khayyam. Born between 1038 and 1048 at Naysabur, where he died in 1123-4, 'Omar is known to the world primarily as a Persian poet and free-thinker; very few realize that he was a first-class mathematician and astronomer as well. The researched of al-Khayyam and his collaborators resulted in the production of the calendar named after his patron al-Ta'rikh al-Jalali, which is even more accurate than the Gregorian calendar. The latter leads to an error of one day in 3330 years, whereas al-Khayyam's apparently leads to an error of one day in about 5000 years.

The institution of the holy pilgrimage, the orientation of the mosques towards Makkah and the need for determining the direction of the K'abah at the time of prayer gave religious impetus to the Moslem study of geography. Astrology, which necessitated the determining of the latitudes and longitudes of all places throughout the world, added its scientific influence. Moslem traders between the seventh and ninth centuries

reached China on the East both by sea and by land, attained the island of Zanzibar and the farthest coasts of Africa on the South, penetrated Russia on the North and were checked in their advance westward only by the dreaded waters of the 'Sea of Darkness' (Atlantic). The reports of returning merchants naturally aroused popular interest in distant lands and alien peoples. Sulayman al-Tajir (the merchant) of Siraf on the Persian Gulf, the account of whose journeys into the Far East was written by an anonymous author in 851, gives us the first Arabic description of China and the coastlands of India. Sulayman reports the use of fingerprints as signature by the Chinese. From this and similar narratives there gradually evolved the stories that have clustered round the name of Sindbad the Sailor. The earliest reliable account of Russia is that of Ahmad ibn-Fadlan ibn-Hammad, sent in 921 by al-Muqtadir to the king of the Bulgars, who resided along the Volga. Most of his account is reproduced in Yaqut's monumental geographical dictionary, Mu'jam al-Buldan, Al-Mas'udi refers to Moslem traders among al-Dir, Slavic tribes perhaps near the Peipet, a tributary of the Dnieper.

History of the Arabs
Philip K. Hitti

International Status of Science

For the first time Koranic people give science an international status. The world's first book on 'Index of the Sciences' was produced by the Muslim Abul Faraq Muhammad, Ibn Ishaq, Ibn Ali Yaqub al-Nadan as early as 996 A.D. It covered lessons of objects summarising books of all Arabs and non-Arabs on all branches of knowledge of mechanics, medicine, engineering, mathematics, astronomy, materialist philosophy and ancient science, jurisprudence and tradition, biography, genealogy, history, grammar and physiology, language, scripture and Koran. Because of sack of Baghdad by Halaku Khan in 1258 A.D., some of the books quoted in this Index of Sciences' are extinct. To realise its importance the reader need ask himself what it would mean to the classical world and scholarship to have such a tremendous work with biographical notes of the literatures of the world.

Education

System of School Education in Europe. For the first time, Al-Beruni introduced system of school education, residential universities, libraries, baths, code of academics, University regulations etc. in Europe.

Founder of Oxford University. The first founder of Oxford University in England in the 11th century was Abdul Swaleh Ibne Dawood latinised as Avendath.

Maths and Algebra

Trigonometry. For the first time Koranic people substituted sine in Trigonometry and introduced mathematical balance.

Invention of Algebra. Algebra is purely Arabic, who gave it the name it bears.

Physics and Astronomy

Koranic people, for the first time, introduced the application of mathematics in astronomy and physics.

Theory of Relativity. Theory of Relativity was expounded by Al-Baiqilani in his book on Interstellar Physics. The great Physicist Dr. Einstein postulated his theory of relativity on the fundamentals of Al-Baqilani.

Discovery of Atomic Theory. Dr. Abdul Rehman Ibne Ahmed (973 A.D.), in his treatise on Inter-stellar physics described fundamentals on which Einstein postulated his theory.

Invention of Quadrants. For the first time, Koranic people invented and manufactured quadrants with radius of 3 feet and sextants with 80 feet.

Sun's Apogee. For the first time, Al-Beruni discovered the motion of the Sun's apogee.

3rd in-equality of the Moon. The 3rd in-equality of the moon was discovered by Abdul Wafa, wrongly attributed to the name of Tyeho Brahe.

Invention of Astrolabe. Astrolabe was invented for the first time and treatises prepared on the same, in 777 A.D., by Ibrahim Al-Fazari, as disclosed by Princeton University USA.

Astronomical Tables. For the first time Astronomical Tables were introduced by Abu 'Abbas and Al-Khowarzmi in 860 A.D. They replaced all the Greek and Indian tables.

Founding Observatories. For the first time, Koranic people established observatories, astronomical equipment in Europe at Malaga, Baghdad, Ray, Shiraz, Samarkand and Naysabur.

Invention of Telescope. Telescope was first invented by the great scientist Abul Hassan. This telescope was used at the observatory of Malaga and Cairo with great success. Inter observatory with telescope was established at Shamsia on the Plain of Tedmore for astronomical observation, in connection with the equinox, the ellipses, the apperitium comet, another celestial phenomena.

The First Planetarium of the World. Another Muslim, Abul Qasim built the first planetarium of the world, where one could see stars, clouds and even lightening, with figures of the sun and the moon, marking the hours on their appointed round.

Most Accurate Calendar. 'Umar Bin Khayyam (born 1038 A.D.) introduced a calendar more accurate than the Gregorian Calendar.

Engineering

Engineering Equipment. For the first time, Koranic people invented and discovered Military Engineering equipment and other instruments - siege machinery including catapults, mangonel, battering ramps, polo archery, javelin throwing, horse hunting and racing, falconry, hawking, horoenian sheep, salvaging machinery, dry dock for ship repairing.

Mechanical Inventions. The greatest mechanics, who for the first time, introduced hundreds of technical constructions e.g. scientific toys, musical instruments, automates, mills in 860 A.D. were Ahmed, Hassan Bin Musa and Ibne Sakir.

The First Scientific Air Flight in the World. As early as 9th century, 'Abbas Ibn Farnas was the first man to make a scientific flight. His flying equipment consisted of wings, which carried him a very long distance in the air, when he alighted, he hurt his leg. (Dr. Hatti, Princeton University, U. S. A.)

Optics

Optical Science. Muslim physicists founded the Science of Optic and drew a number of significant conclusions regarding the theory of magnifying lenses and the velocity, transmission, and reflection of light.

Properties of Lenses. For the first time Koranic people introduced properties of lenses, theory of vision, manufacture of observational instruments, correct order of magnitude for the size of the earth and the solar system.

Geometrical Optics. Physiological and Geometrical Optics were introduced, for the first time, by Abu Yusuf Yaqub and Ibne Ishaq Al-Kindi.

Chemistry

Introduction of Balance. It was made for the first time by the great chemist Jabir Ibne Hayyan, which was also followed by important consequences in theoretical sciences, which pre-eminently was also the establishment of the laws of combination of bodies. By introducing several forms of Balance, Koranic people marked the epoch when Chemistry ceased to be exclusively a science of quality and became one of quantity. They had correct ideas respecting mechanical properties of water and decomposition of water constituting also an epoch in Chemistry. Strong acids and aqua regia were also discovered by Jabir Ibne Hayyan.

Discovery of Gold. Gold manufacture was discovered, for the first time, by M. Kasim Ibne Ahmed as disclosed by Dr. E. J. Holymyord, Paris University.

Glass Manufacture. The first person in the world to discover the manufacture of glass from stone was 'Abbas Ibn Farnas in the 9th century.

Manufacture of Paper. For the first time, Koranic People introduced manufacture of paper from cotton in Samarkand in 751 A.D.

Introduction of use of Chemistry in Medicine. The greatest Chemist in history, Jabir Ibne Hayyan called as Geber in Europe, introduced chemistry in medicine, for the first time in 772 A.D.

Biology and Medicine

Founders of New Drugs. For the first time 1800 new drugs and botanical gardens in various places were introduced by Abul Baitar, Abul 'Uthman, and Abdul Malik Bin Qarib.

Medical Topography. For the first time, Ibne D Jani introduced medical topography of Alexandria.

Discovery of Circulation of Blood. Circulation of blood was discovered in 1270 A.D. by Ibne Nafiz, three centuries before Dr. Serviettes, the Portuguese Scientist, who is wrongly credited with this discovery.

Veterinary Treatise. The first Veterinary Treatise was composed by Abu Bakr Ibne Manzer in 1240 A.D.

Treatise on Animals and Plants. The first treatise on animals and plants was introduced by school Al-Asmai of Basra City in 740 A.D.

Invention of Surgical Instruments. The greatest surgeon, who for the first time, himself invented and manufactured over two hundred surgical instruments was Abul Qassim Al-Zehravi (936 - 1013 AD.). Abul Qasim's book Al-Tasrif (30 volumes) has been copied by all the European text books on surgery up to 19th century.

Geography

The greatest discovery by Koranic people was that the oceans are connected with each other and form a compact oceanic world. First sea route started from the Indian Ocean passing through the Pacific, Arctic and the Atlantic Oceans.

Sulaiman al-Tajir of Siraf made a voyage on Persian Gulf in 851 A.D. Muslim traders between 7th and 9th centuries reached China both by sea and land, attained to Island of Zanzibar and the farthest coast of Africa on the South and the West, and penetrated Russia to the North. Determined latitudes and longitudes of all places through the world, measured longitudes from prime meridian now called the Canaries.

Invention of Mariner's Compass. Mariner's compass was invented for the first time by Admiral Ibn-Majid declares Sir R. F. Burton, thus opening open-sea voyages to mankind for trade. Greek and Roman shipping, before this innovation, was confined to coastal shipping only. The Egyptian, Greeks or the Romans did not dare to enter into open sea trade before this. Oceanic routes, with maps, were established for the first time by the people of Koran, connecting the Pacific and the Atlantic oceans. The first voyage of inter connected oceans was made by Admiral Sulaiman and Admiral Shahab ud-Din as early as 10th century.

Vasco da Gama was actually picketed by the Arabs up to India. History acknowledges the fact that it was only the Arabs who had the academic maps and navigational equipment long before Columbus and Vasco da Gama.

Discovery of Land Routes along and through the Valleys of River Volga. The land routes along and through the valleys of the river Volga and the Danube were discovered, for the first time, by Al-Masood Idrisi, Ibne Rusta, Ibne Haub, Ibne Haces and Ibne Wahhab. The Geographers travelled through the yet unknown forested and dangerous areas of Europe and made all the records by personal observation and experience.

Suez Canal. Original Suez Canal was constructed for the first time, in 7th century by 'Amr, the Governor of Egypt, during the time of the Second Caliph 'Umar[RA] and not by the Europeans.

Invention and manufacture of Celestial Globes by Muslims

Earliest Arabs ascertained correct size of the earth by measurement of a degree on the Red Sea and its form (spherity), in singular contrast with the absurd doctrine of Rome, of the flatness of earth. The Koranic people taught Geography with the help of Globes in Arabic Schools. Earliest illustrated globes of universe - five in number: -

The very first in the world, of 209-mm diameter made by Prof. Shams ud-Din Muhammad, in the year 1080 A.D.

One globe of 190-cm with 49 diagrams, made by Prof. Ibn Abi Kasem, in the year 1125 A.D. at present kept in National Museum of Naples.

One globe of 240-cm diameter, made by Prof. Ibn Hial, in the year 1175 A.D. preserved with Royal Asiatic Society London.

One globe of brass giving details of 47 celestial bodies, made by Moinuddin Ulrse, in the year 1279 A.D. present in Dresden University, UK.

Another globe with Persian inscriptions, made in 1300 A.D. is kept in Metropolitan Museum, New York.

Two Hollow brass spheres of 37-mm diagrams with inscriptions are kept in Florence University.

An Introduction to the History of Science
Carnegie Institution of Washington - 1927

Medicine

Moslem's Contributions to Medicine

The accomplishments in medicine were just as remarkable. Avicenna discovered the contagious nature of tuberculosis, described pleurisy and several varieties of nervous ailments, and pointed out that disease can be spread through contamination of water and soil. His chief medical writing, the Canon, was venerated in Europe as an authoritative work till late in the seventeenth century. Avicenna's older contemporary, Rhazes, was the greatest clinical physician of the medieval world. His supreme achievement was the discovery of the true nature of smallpox. Other Moslem physicians discovered the value of cauterization and of styptic agents, diagnosed cancer of the stomach, prescribed antidotes for cases of poisoning, and made notable progress in treatment of diseases of the eyes. In addition, they recognised the highly infectious character of the plague, pointing out that it could be transmitted by garments, by eating utensils and drinking cups, as well as by personal contact. Finally, they excelled all other medieval people in the organisation of hospitals and in the control of medical practice. Authentic information is on record of at least thirty-four great hospitals located in the principal cities of Persia, Syria, and Egypt. They appear to have been organised in a strikingly modern fashion. Each had its ward for particular cases, its dispensary and its library. The chief physicians and surgeons lectured to the students and graduates, examined them and issued diplomas or licences to practise. Even the owners of leeches, who in most cases were also barbers, had to submit them for inspection at regular intervals.

Western Civilisations - Their History and Their Culture
Edward McNall Burns - 1941

Abul Qassim – the Physician

At a time when a physician was also a philosopher, a theologian, a mathematician, an astronomer, a linguist, and a universal scholar, Abul Qassim advocated specialisation and tended to adhere to medicine and its practice alone. His work *Al-Tasrif*, an illustrated practice of medicine and surgery, a real miniature encyclopaedia of 1500 pages shows Abul Qassim to be not only a medical scholar but a great practising physician and surgeon. The rich contents of *Al-Tasrif* exerted an immense influence on the study of medicine and the progress of surgery in Europe in the later centuries. In *Al-Tasrif* are revealed Abul Qassim's moral honesty and integrity, his professional dignity and ingeniousness. The book contains descriptions and the earliest pictures in history of

about 200 surgical instruments and these were advised by Abul Qassim himself. Of all the 30 volumes of *Al-Tasrif*, Discourse 30 on surgery became the most famous and had by far the widest and greatest influence. Almost all the European authors of surgical texts from the 12th to the 16th centuries referred to Abdul Qassim's surgery and copied from it. Discourse 28 is on Pharmacy and was translated into Latin as early as 1288 A.D. as Liber Servitoris. It was the fourth medical book ever printed. Today 42 manuscript copies of his original Arabic text and 27 Latin translation in manuscripts are treasured in the most important libraries and museums of the world; at least 27 printed editions of his book in Latin, Arabic, French, English and Spanish adorn the rare collections.

Gradually, however, Western Europe, chiefly in Spain and Sicily, both strongly subject to Arab influences, scholars were absorbing the knowledge opened up to them by the Arabs. They approached that knowledge with a great and growing enthusiasm combined with a blind trust in its authority. Medieval Europe regarded Arab medicine with superstitious awe and Cordova was looked upon with admiration by the educated Europeans. As a result up to the end of the sixteenth century, the medical curricula of European universities demanded a knowledge of Avicenna 's 'Canon' (*Arabian Medicine*, by Donald Campbell, London, 1926). It is even doubtful weather the leading medical schools of Europe would have seen the light of day had it not been for the impetus of Arab learning. When such schools were established in Paris (1110 A.D.), Bologna (1113), Montpellier (1181), Padua (1222) and Naples (1224), their curricula were dominated entirely by Arab medicine. It is interesting to note that these universities, owing their birth as they did to Arab influences, have remained among the leading medical schools to the present moment.

Among the Western pioneers of Arab medicine were Roger Bacon, Medical Scott, Gerard of Gremona, Adelard of Bath, and Gerbert, the future Pope Sylvester II. The first transmitter of Arab medicine, however, was a North African, Constantinus Africanus (1820-87), the first to translate the writings of Haly Abbas and other Arab doctors, as well as the Arabic versions of Hippocrates and Galen, into Latin. Pressure from the Church compelled him to suppress the names of the Arab authors. That the services of medical men were appreciated by the Arabs we learn from innumerable stories that tell us of the lavish gifts showered upon this or that doctor. The Abbasid court physician Bukht-Yishu, received from public funds, a monthly salary of 10,000 Dirhams,

and from the Privy Purse 50,000 per year. For bleeding the Caliph Harun al-Rashid twice a year, he received 100,000 Dirhams.

The Physician Al-Razi

It is a singular tragedy that so little is known about the life of Abu Bakr Muhammad ibn Zakariyya ar-Razi (Rhazes), the great physician of the Islamic period. Those of his works which were translated into Latin, particularly his treatise on 'Small Pox and Measles,' established his reputation as an excellent observer and at the same time as a critical compiler of Greek, Syriac and on the Arabic medical knowledge. Neuburger, in his 'Excellent History of Medicine', was very sound in his judgment when he said that Rhazes was without doubt the greatest of the very few physicians of the Islamic period who found their way to Hippocrates and the inestimable value of unbiased clinical observation. The present publication will, I hope, confirm Neuburger's views.

Rhaze's best-known work is his 'Smallpox and measles,' which has had the honor of about a dozen translations into Latin and modern languages. Of it Neuburger says: "It ranks high in importance in the history of epidemology as the earliest monograph upon small-box, and shows Rhazes as a conscientious practitioner, almost free from dogmatic prejudices, following in the footsteps of Hippocrates." Next in importance comes the Kitab at-Tibb al-Mansuri (The book of Medicine dedicated to Mansur), known to the Latin Middle Ages as *Liber al Mansoris* and edited in many Latin printed texts. It is a short, practical textbook of medicine, and its ninth part (Labor Nonus) enjoyed great repute and formed the basis of medical learning until late in the sixteenth century.

We omit mention of the Rhazes minor medical treatises, as well as of his many writings on medical ethics. We recommend particularly the study of his short treatise on 'The reason for which the hearts of most people turn away from honest physicians', translated by Steinschneider.

Of all the many works of Rhazes by far the most voluminous is 'The Comprehensive Book of Medicine' (Kitab al-Hawi fi 't-Tibb)". This book has never been published in the original Arabic text, which would comprise about twenty-four volumes.

Studies in Medieval Arabic Medicine
Max Meyerhof

In the curative use of drugs some remarkable advances were made at this time by the Arabs. It was they who established the first apothecary shops, founded the earliest school of pharmacy and produced the first pharmacopoeia. Several pharmacological treatises were composed, beginning with those of the world famed Jabir ibn-Hayyan, the father of Arabic alchemy, who flourished about 776. As early as the days of al-Ma'mun and al-Mu'tasim pharmacists had to pass some kind of examination. Like druggists, physicians also were required to submit to a test. Following a case of malpractice Sinan ibn-Thabit ibn-Qurrah was ordered by al-Muqtadir in 931 to examine all practising physicians and grant certificates (sing. ijazah) only to those who satisfied him. Over eight hundred and sixty such men in Baghdad passed the test and the capital rid itself of its quacks. On the orders of al-Muqtadir's virtuous vizir 'Ali ibn-Isa, Sinan organized a staff of physicians who would go from place to place carrying drugs and administering relief to ailing people. Other physicians made daily visits to jails. Such facts show an intelligent interest in public hygiene unknown to the rest of the world at that time. In his efforts to raise the scientific standard of the medical profession and in his efficient administration of the Baghdad hospital lay Sinan's chief title to fame. This hospital, the first in Islam, was created by Harun al-Rashid at the beginning of the ninth century, following the Persian model, as the Arabic name Bimaristan indicated. Not long afterwards other hospitals to the number of thirty-four grew up throughout the Moslem world. Cairo saw its first hospital under ibn-Tulum about 872, an institution, which survived until the fifteenth century. Travelling clinics made their appearance in the eleventh century. Moslem hospitals had special wards for women and each had its own dispensary. Some were equipped with medical libraries and offered courses in medicine.

The most notable medical authors who followed the epoch of the great translators were Persian in nationality but Arab in language: 'Ali al-Tabari, al-Razi, 'Ali ibn-'Abbas al-Majusi and ibn-Sina. The portraits of two of these, al-Razi and ibn-Sina adorn the great hall of the School of Medicine at the University of Paris.

The Arabic text of the 'Qanun' was published in Rome in 1593 and was therefore one of the earliest Arabic books to see print. Translated into Latin by Gerard of Cremona in the twelfth century, this Canon, with its encyclopaedia contents, its systematic arrangement and philosophic plane, soon worked its way into a position of pre-eminence in the medical literature of the age, displacing the works of Galen, al-Razi and al-Majusi and becoming the text-book for medical education in the schools of Europe.

In the last thirty years of the fifteenth century it passed through fifteen Latin editions and one Hebrew. In recent years a partial translation into English was made. The book distinguishes mediastinitis from pleurisy and recognizes the contagious nature of phthisis and the spreading of diseases by water and soil. It gives a scientific diagnosis of ankylostomiasis and attributes it to an intestinal worm. Its materia medica consider some seven hundred and sixty drugs. From the twelfth to the seventeenth centuries this work served as the chief guide to medical science in the West and it is still in occasional use in the Moslem East. In the words of Dr. Osler it has remained "a medical bible for a longer period than any other work".

History of the Arabs
Philip K. Hitti

Commerce

Commerce

Such was the destitute condition of Europe prior to the development of that commerce, that, having neither native products nor money to exchange for the wares of the Arabs, the first Italian merchant-adventurers kidnapped the children of neighbouring villages, and paid for their goods with cargoes of human flesh. The Arabs opened up the land routes to India, China, Malacca, and Timbuctoo, the emporium of Central African Trade; and sent their caravans to the rich lands beyond the Sahara long before the Portuguese. They held the monopoly of the sea-routes to India, and the Emosaids founded along the eastern coast of Africa a line of trading colonies from the Sudan Coast and Socotra, Mombaza, Mozambique, Zanzibar, and Madagascar.

They improved the art of the ship building, taught Mediterranean seaman to construct lighter-sailing-ships or caravels (garaf), to caulk their boats with tar-still known in a Romance languages by the Arabic name of gatran - to handle sails and cables. Moorish merchants established their fundaks at the Christian ports, plied between the great seasports of Andalusia, Valentia, Almeria, and Malaga to those of Provence and the South of France, brought their wares to the market of Montpellier and Norbonne. Arab Dinars to this day found as far North as the shores of the North Sea and the Baltic in greater abundance than Roman coins or Greek Besants. They introduced a system of Bills of Exchange, and the Commerce of the Mediterranean was regulated by the institution of sea-consuls first adopted at Barcelona.

The fine linens, the cottons, the silks, the delicate and gorgeous fabrics of the Saracenic world, satins and sarcenets, Persian taffetas, damasks from Damascus, baudekin from Baghdad, muslin from Mosul, gauzes from Gaza, grenadines from Grenada, moirs, crepes and chiffons (not rag, but diaphanous chiff from Tripoli), chamlets, karsies, and radzimirs, created a demand for fine raiment among the coarsely clad population of Europe. The looms of Syria and Spain, of which 16 thousand were at work in Seville alone, and where a hundred and eighty thousand silk-workers were employed at Cordova, wove the material for the garments of nobles and the sacramental vestments of Christian prelates; and it was not an uncommon spectacle to see a bishop celebrating Mass with an Ayat of the Koran elegantly embroidered on his chasulble. The women of Europe learned to wear an Arab kamis (chemise) and jubba (jupe, jupon). The warriors of Christendom were eager to wield blades forged in Damascus, Almeria, or Toledo, and to ride in Cordovan saddles. The sugar cane was introduced and Europe-

ans first tasted confectioneries, sweetmeats and sorbets. By and by the manufacturers of the East were introduced and imitated in Christian Europe. Sill-looms were established in Norman Sicily. Venice copied with the aid of native craftsmen the glassware of Antioch; Lyons the damasks, Paris the tapis sarrasins, and the Rheims the linen of Syria. The rich dies of the East were brought to Bruges, where they were used to prepare English wool for the market. The wares of Spain and Majorca led to the establishment of Italian factories for the manufacture of majolica. Sugar factories were transferred from Sicily to Italy and from Spain to the South of France.

The Arabs introduced three inventions into Europe, each of which was to bring about a world-transforming revolution: the mariner's compass which was to expand Europe to the ends of the earth; gun powder which was to bring to an end the supremacy of the armoured Knight; and paper which prepared the way for the printing-press. The revolution effected by the introduction of paper was scarcely less important than that brought about by printing. The extreme scarcity of books was in a large measure due to the scarcity of parchment; we know how the text of the ancient manuscripts were erased again and again to supply material for writing missals and legends of saints, so that scarcely a manuscript older than the 11th century survives today. The prices of books were consequently prohibitive; a Countess of Anjou paid two hundred sheep and five measures each of wheat, rye, and the millet for a book of homilies; and as late as the reign of Louis XI, when that king wished to borrow the medical works of Al-Razi from the library of Paris university, he deposited in pledge a quantity of plate, and was moreover obliged to procure a noble man to join him as surety in a deed binding him to restore it. The Arabs first adopted the manufacture of paper from silk as practised in China; and silk paper was manufactured at Samarkand and Bokhara; for silk they at first substituted cotton, damasc paper, and later linen. The linen-paper industry was long a monopoly of Xative, near Valentia, whence it was introduced into Catalonia and Provence, and later to Treviso and Padua. The first parts of Europe to emerge from barbarism were those most directly under the influence of Moorish culture: the Spanish Marches of Catalonia, Provence, and Sicily.

The Making of Humanity
Dr. Robert Briffault
London – 1929

Çommerce

The mention of the mariner's compass leads us correctly to infer that the Arabs were interested in commercial pursuits, a conclusion to which we should also come when

we consider the revenues of some of their Caliphs. That of Abderrahman III. is stated at five and a half million Sterling, a vast sum if considered by its modern equivalent, and far more than could possibly be raised by taxes on the produce of the soil. It probably exceeded the entire revenue of all the sovereigns of Christendom taken together. From Barcelona and other ports, an immense trade with the Levant was maintained. They maintained a merchant marine of more than a thousand ships. They had factories and consuls on the Tanais. With Constantinople alone they maintained a great trade; it ramified from the Black Sea and East Mediterranean into the interior of Asia; it reached the ports of India and China, and extended along the African coast as far as Madagascar. Even in these commercial affairs the singular genius of the Arabs shines forth. In the midst of the tenth century, when Europe was about in the same condition that Caffraria is now, enlightened Muslims, like Abul Cassem, were writing treatises on the principles of trade and commerce. As on so many other occasions, on these affairs they have left traces. The smallest weight they used in trade was the grain of barely, four of which were equal to one sweet pea, called in Arabic carat. We still use the grain as our unit of weight, and still speak of gold as being so many carats fine.

A History of The Intellectual Development of Europe
New York – 1875

Commerce and Industry

Commerce and manufacturing were the main foundations of the national wealth. Both were developed in an extraordinary degree. The Koranic people invented a great many of the instruments of Commerce still used by the modern world: checks, receipts, bills of lading, letters of credit, trade associations, joint-stock companies, and various others. Moslem merchants penetrated into Southern Russia and even into the equatorial regions of Africa. Caravans of thousand of camels travelled overland to the gates of India and China. Moslem ships furrowed new paths across the Indian Ocean, the Persian Gulf, and the Caspian Sea. The Muslims dominated Mediterranean Sea almost as if it were their private lake. But so vast an extension of Commerce would not have been possible without a corresponding development of Industry; for it was the ability of the people of one region to turn their natural resources into finished products for sale to other regions, which provided a basis for a large part of the trade. Nearly every one of the great cities specialised in some particular variety of manufactures. Mosul was a centre of the manufacture of cotton cloth; Baghdad specialised in glassware, jewellery, pottery, and silks. Damascus was famous for its fine steel and for its Damask or

embossed linen: Morocco was noted for the manufacture of leather; Toledo for its excellent swords. The products of these cities of course did not exhaust the list of Koranic manufacturers. Drugs, perfumes, carpets, tapestries, brocades, woollens, satins, metal products and a host of others were turned out by the craftsman of many cities. The men engaged in various industries were organised into guilds, over which the government exercised only a general supervision for the prevention of fraudulent practices. For the most part, the Guilds themselves regulated the conduct of business by their own members. Control by the state over economic affairs was much less rigid than in the Byzantine Empire.

Western Civilisations - Their History and Their Culture
Edward McNall Burns - 1941

Geography and Commerce

Were we to draw a map of the political condition of Europe, Africa, and Western Asia about the middle of the 10th century of our era, we should see that by for the greater part of that inhabited world, which the Greeks called Oikoumene, was occupied by countries possessed of an Islamic government and an Islamic civilisation. They no longer constituted a strict political unity, but they were connected by such strong ties of common religion and culture that their inhabitants-and not only their Muhammadans inhabitants-felt themselves citizens of one vast Empire, of which Mecca was the religious, and Baghdad the cultural and political center. This vast empire had grown in the three foregoing centuries from a series of conquests that started originally from Medina. Arabia was its centre.

If we consider, on the other hand, the geographical and political conditions of the Christian European world of those days, we immediately realize what extent in reality the latter must have been dependent on the huge Islamic empire. To the South the Mediterranean, at that time under the domination of the rulers of the Muhammadan shores, formed an insurmountable barrier; with the East the Byzantine empire stood face to face with Islam in Armenia: the northern Caucasus and Eastern Europe were the home of half-civilized nations that were at least as much under the Muhammadans as under the Christian influence.

The relative geographical position of the pilgrimage centers of the two rival religions was quite different. Jerusalem, the ideal religious center of Christian Europe, had since A. D. 638 been under the control of the Muhammadans, but the Muhammadan conquest had not put an end to the pilgrimage undertaken by European Christians to the

holy city sepulchre. In the Islamic world matters were quite different. Mecca, the center of pilgrimage, occupied a central geographical position in Islam itself. The Hajj became not only a powerful factor in promoting religious unity, but it also materially assisted in strengthening the ties of commerce between all Muhammadan countries, and disseminated among Muhammadans a fairly good knowledge of all parts of their world. To the Hajj was due the compilation of a number of itineraries, in which the stations and stages of the roads leading from different countries to Mecca was indicated. Nearly a millennium has passed since the cultural horizon of Christian Europe was bounded in nearly all directions by Islam.

The pilgrimage to Mecca and Madina, the duty of every Muslim, favored the spread of science since it compelled students from India and Spain, from Asia Minor and Africa, to pass through many lands where they could visit Mosques and academies and have intercourse with prominent scholars. Moreover many came from Tunis to Persia, and from the Caspian Sea to Cairo and Cordova, to follow the courses of famous teachers. The actual process of teaching was much as it is today.

A legacy of still greater importance walls the idea of that the known hemisphere of the world had a center for world summit, situated at an equal distance from East, West, North, and South. Al-Battani speaks of this cupola of the earth as an island, but another author of his time (Ibn Rusta) already knows it as the cupola of Arin. Like the Muhammadan astronomers, their Christian disciples considered this doctrine of the highest importance; amongst the latter were Adelard of Bath, who translated in 1126 the trigonometrical tables of Al-Khwarizmi, Gerhard or Cremona and, in the thirteenth century Roger Bacon and Albertus Magnus. The Arin theory was still later to be found in the Imago Mundi of Cardinal Peter of Ailly, published in 1410, and it was from this book that Christopher Columbus learnt the same doctrine, which had developed in the meantime so far as to make Columbus believe that the earth was shaped in the form of a pear, and that, of the Western Hemisphere, opposite the summit of Arin, there was another center much more elevated than the one on the eastern side, so as to form the shape of the lower half of the pear. Thus Islamic geographical theory may claim a share in the discovery of then new word.

The Indian Ocean, consequently, was the only field of great enterprise. It's base was the Persian Gulf, where coasts of Siraf and Basra with its suburb al- Ubulla, and those on the Oman coast had been very important centers of trade and navigation. The coming of Islam, however, and especially the establishment of its political center in Iraq,

encouraged the spirit of enterprise. About the middle of the 10th century Muhammadan ships had already reached the Chinese town of Khanfu, now Canton. There was then a considerable Islamic colony in that town, which had become an emporium of the trade with China. From here some Muhammadan traders and sailors went even farther North, and it is probable that they knew Korea and Japan.

The age-long seafaring tradition which centers in the Persian Gulf prepared the way for the nations that afterward sailed and ruled those waters: Portuguese, Turks, British, and Dutch. When Vasco de Gama after his circumnavigation of Africa in 1498, had reached Malindi on the East Coast of Africa, it was an Arabic pilot that showed him the way to India. According to Portuguese sources, this pilot was in possession of a very good sea-map and of other maritime instruments. Arabic sources of that time also knew the story; they state that the pilot was unknown under the name of Ahmad Ibn Majid. The modern international maritime vocabulary contains not a few words of Arabic origin, which show the former Muhammadan supremacy on these seas, such words for example as admiral, cable, average, shallop (sloop), barque, and in the maritime language of the Indian Ocean, monsoon.

Apart from this far-reaching Islamic-Bulgarian trade-of which traces had been found also in Germany, there were also commercial relations with the empire of the Khazars, by the Caspian Sea and the mouth of the Volga, where was situated Itil or Atil, the capital of the Khazars. This trade was less important for the exchange of merchandise, but the Khazar empire constituting a kind of buffer-state between Islam and The Byzantine empire, furthered the transmission of many Islamic and oriental products which found their way into Christian countries. It is true that since the 8th century Muslim travelers and traders are to be found in Italian towns and in Constantinople, but these relations were only the germs of the lively commercial intercourse that began to develop in mid 11th century, to be interrupted only for a short time in the first period of the Crusades. After the barrier of former ages had broken down, trade itself subsequently became one of the strongest factors in promoting the transmission of cultural values to the European peoples, who, aided by their rulers (as Roger of Sicily) were eagerly seeking to benefit by them.

The manifold ways in which commercial relations led to close co-operation between Muslims and Christians e.g. in the form of joint partnerships and of commercial treaties-cannot be treated here in details. The great riches of the material culture, which the Islamic world had gathered for nearly five centuries, were poured down upon Europe.

These riches consisted not only of Chinese, Indian, and African products, which the enterprising spirit of Islam had fetched from far-distant lands; they were in the first place represented by what the Muhammadan countries themselves yielded of natural and industrial products. Industrial production in Muhammadan countries had developed in a particular way; it was chiefly characterized by being completely under the control of the rulers, by its lack of capital, and by its organization of the craftsmen in guilds.

In the first place should be mentioned the product of the textile industry; a number of names, now commonly in use, shows which textiles were originally imported from Islamic countries: muslin (from Mosul), damask (from Damascus), baldachin (originally of stuff made in Baghdad), and other woven stuff, which bear Arabic or Persian names like gauze, cotton, satin, etc. That import of oriental rugs is like wise as old as the Middle Ages. It is curious to note, too, that the state robes of the medieval German emperors bore Arabic inscription; they were ordered and executed probably in Sicily, where Islamic art and industry continued for a long time after the Christian reconquest. Natural products, which, by their name, betray their original importation from Muhammadan countries, are fruits like the orange, lemon, and apricot, vegetables such as spinach and artichokes, further saffron, and the now so important aniline. Likewise names of precious stones and (lapis lazuli) and of musical instruments (lute, guitar), though it cannot be proved that the borrowing of these terms goes back directly to commercial intercourse. The same is to be said about so important a material as paper, the fabrication of which Europe learnt from the Muhammadan peoples in the twelfth century.

Finally, our commercial vocabulary itself has preserved some very eloquent proofs of the fact that there was a time when Islamic trade and trade customs exercised a deep influence on the commercial development in Christian countries. The word sterling, for example, has reached the English language only through the medium of Arabic. The word traffic itself probably is to be derived from the Arabic tafriq, which means distribution, and such, well known word as tarrif is nothing but the good Arabic ta'rif meaning announcement. To the same origin belong the words risk, tare, caliber, and that every day word Magazine, from Arabic makhazin, meaning store (the French magasin is still the common word for shop). The check has already been mentioned in the description of the African Trade, and the German and Dutch words for the same thing are equally Arabic. So is also the term aval. Next to the knowledge of the Bill of Ex-

change the conception of joint-stock company was acquired by the partnership of Muslim and Christian Italian merchants. A largely used word like douane is a reminder of the time when regular commercial intercourse had developed in different ports of the Mediterranean. It is well known that this intercourse has also reacted largely on the commercial organization of Western nations. The treaties, which were concluded with Muhammadan rulers and the institution of consular representation in Eastern ports, have been important stages in the development of the rules that nowadays govern international trade.

As may be seen from the previous observations, the cultural gain, which Europe has acquired from the Islamic world in the domain of the Geography and commerce, is not the fruit of one moment, but is based on the mutual relations that have gone on since the beginning of 11th century and were especially lively during the Mongol period in the thirteenth century. Also the fact that Islamic civilisation with its accretions has been continued by states such as Turkey, Persia, and Muhammadan peoples in India and the East Indies, has caused many Islamic views and customs to become known and even practiced in European countries. But no period shows so clearly the once enormous superiority of the Islamic peoples on the Christian world as the 10^{th} century, when Islam was at the summit of its prosperity and Christian Europe had come to a seemingly hopeless standstill.

The Legacy of Islam
Sir Thomas Arnold
Oxford - 1931

Economics

The Economic Development of the Islamic Empire

The Economic Development of the Koranic Civilisation in Europe remains to this day, one of the marvels of history. In areas, which had produced practically nothing for centuries, the Koranic People literally made deserts to blossom as the rose. Where only squalid villages encumbered the landscape, they built magnificent cities. The products of their industries were known all over the world from China to France and from the interior of Africa to the shores of the Baltic. As the builders of a vast commercial empire, they excelled the Carthaginians (Greek). The reasons for this astounding economic development do not lend themselves to easy explanation. Perhaps it was due in some measure to the long experience with trade which many of the Arabs had had in their homeland. When a wider field opened up, they made the most of their skill. The diffusion of the Arabic language over a vast expanse of territory also helped to extend the avenues of Muslim world trade. They did not hesitate to take risks or to penetrate into unknown regions. They were among the boldest mariners and explorers who had yet appeared on the scene of history.

Western Civilisations - Their History and Their Culture
Edward McNall Burns - 1941

Economic, Industrial and Commercial Development of Europe

British, French and American investigations through the 20th Century disclosed the hitherto purposely hidden facts that Koran was the fountainhead of the European economic development. The European industries, commerce and trade were originated, initiated and developed by the People of Koran from 9th century to 14th century. They also developed the Modern System of Accounting, Calculation and Bookkeeping, through their invention of Arabic numerals, zero and decimal system. No progress could be possible without the Koranic invention of the Science of Numbers, which was unknown before. It was the Koranic People who invented as early as 9th and 10th century the Modern European system of Public and Private Companies, Guilds, Trade Organisation, Banking System, Letters of Credit, Bills of Lading, Treatises on Accounting and Rules of Commerce. Find their source nowhere else but in Koranic Doctrines.

The Koranic language was the language of Europe for 500 years (800-1400 A.D.), and the Koranic People were the fathers of chemistry like Jabir Ibn-e Hayyan (10th Cen-

tury), surgery like Abul Qassim Zehravi (950 A.D.), physics like Al-Hazen (10th Century), astronomy like Ibn-e Admi, algebra like Al-Khowarzmi., biology like Ibn-e Baitar and Abu 'Uthman, navigation and exploration like Ibn-e Majid and Ibn-e Rusta Masudi, mathematics like Ibn-e Sinan, history like Farabi and Turabi, encyclopaedia like Al-Batani and Al-Razi, atomic theory like Al-Baqlani, philosophy like Ibn-e Rushd (Averroes), totality of sciences like Al-Kindi.

Arts

Improvements in the Arts of Life

Our obligations to the Arabs in the arts of life are more marked than in the higher branches of science, perhaps only because our ancestors were better prepared to take advantage of things connected with daily affairs. They set an example of skilful agriculture, the practice of which was regulated by a code of law. Not only did they attend to the cultivation of plants, introducing very many new ones, they likewise paid great attention to the breeding of cattle, especially the sheep and horse. To them we owe the introduction of the great products, rice, sugar, cotton, and also, as we have previously observed, nearly all the fine gardens and orchard fruits, together with many less important plants, as spinach and saffron. To them Spain owes the culture of silk; they gave to Xeres and Malaga their celebrity for wine. They introduced the Egyptian system of irrigation by floodgates, wheels and pump. They also promoted many important branches of industry; improved the manufacture of textile fabrics, earthenware, iron, steel; the Toledo sword-blades were every where prized for their temper. The Arabs, on their expulsion from Spain carried the manufacture of a kind of leather, in which they were acknowledged to excel, to Morocco, from which country the leather itself has now taken its name. They also introduced inventions of a more ominous kind - gunpowder and artillery. The cannon they used appeared to have been made of wrought iron. But perhaps they more than compensated for these evil contrivances by the introduction of the mariner's compass.

A History of The Intellectual Development of Europe
New York - 1875

The Eclectic Art of the Moslems

Architecture is generally considered the most important of the Moslem arts, inasmuch as the development of both painting and sculpture was inhibited by religious prejudice against representation of the human form. By no means all of the examples of this architecture were mosques or churches; many were palaces, schools, libraries, private mansions, and hospitals. Among its principal elements were bulbous domes, minarets, horseshoe arches and twisted columns, together with the use of tracery in stone, alternating stripes of black and white, mosaics, and Arabic script as decorative devices. The so-called minor arts of the Moslems included the weaving of gorgeous pile carpets and rugs, magnificent leather tooling and the making of brocaded silks and tapestries, in-

laid metal work, enamelled glassware, and painted pottery. Most of the products of these arts were embellished with complicated patterns of interlacing geometric designs, plants and fruits and flowers, Arabic script, and fantastic animal creatures. The richness and variety of these works of art afford most convincing proof of the vitality of the Moslem civilisation.

The Intellectual and Artistic influence of the Islamic Civilisation

The influence of Koranic Civilisation upon Medieval Europe and upon the Renaissance was almost incalculable, and some of that influence has, of course, persisted until the present time. The philosophy of the Moslems was almost as important as Christianity in providing a basis for the scholastic thought of the thirteenth century; for it was the Moslems who made available to the West most of the works of Aristotle and indicated more thoroughly than ever before the use to which those writings could be put as a support for religious doctrine. The scientific achievements of the Koranic people furnished even more enduring contribution. The list of these contributions includes the Hindu-Arabic system of numerals, the science of Algebra, such medical discoveries as the fact of contagion and the nature of smallpox and measles, innumerable drugs and compounds, and the chemical processes of sublimation and filtration. Though the activity of the Moslems in literature was hardly as extensive as in science, their literary influence has been decidedly important. The songs of the troubadours and some other examples of the poetry of medieval France were directly inspired by Moslem writings. Some of the stories in the *Arabian Nights* found their way into Boccaccio's *Decameron* and Chaucer's *Canterbury Tales*, while Firdausi's *Book of Kings* furnished the nineteenth-century English writer, Matthew Arnold with the material for his story of *Sohrab and Rustum*. The art of the Moslems has likewise had an influence of deep significance, especially upon Gothic architecture. A surprisingly large number of the elements in the design of Gothic cathedrals were apparently derived from the mosques and palaces of the Moslems. A partial list would include the cusped arches, the traceried windows, the pointed arch, the use of script and arabesques as decorative devices, and possible ribbed vaulting. The architecture of late medieval castles was even more closely copied from the designs of Moslem buildings, especially the fortresses of Syria.

Finally the Koranic people extended a profound influence upon the economic development of medieval and early modern Europe. The revival of trade, which took place in Western Europe in the eleventh, twelfth and thirteenth centuries would scarcely have

been possible without the development of Moslem industry and agriculture to stimulate the demand for new products in the West. From the Moslems, Western Europeans acquired the knowledge of the compass, the astrolabe, the art of making paper, and possibly the production of silk. Further more, the development by the Moslems of the joint-stock company, checks, letters of credit, and other aids to business transaction had much to do with the beginning of the Commercial Revolution in Europe about 1400. Perhaps the extent of Moslem economic influence is most clearly revealed in the enormous number of words now in common usage which were originally of Arabic origin. Among them are: traffic, tariff, risk, check, magazine, alcohol, cipher, zero, algebra, muslin, and bazaar.

Western Civilisations - Their History and Their Culture
Edward McNall Burns - 1941

Metalwork and Ceramics

The Arabs in Spain carried on almost all the minor and practical arts developed by Moslems in other lands. In metalwork involving decoration, raising patterns in relief or engraving them inlaying with gold and silver and inscribing characters, the Hispano-Moresque school excelled. One of the earliest specimens is a relic of Hisham II (976-1009) preserved on the high altar of the Cathedral of Gerona in the form of a wooden casket sheathed with silver-gilt plating patterned in *repousse* with scroll-like foliation. It bears an Arabic inscription stating that it is the work of two craftsmen, Badr and Tarif, and was made for a courtier of al-Hakam II (961-76) as a present for the heir apparent, Hisham. In metal-work such as cutlery, sword blades and astrolabes Toledo and Seville were especially noted. Next to damascene blades, toledos had the finest temper and the greatest elasticity. The astrolabe, an astronomical instrument of ancient Greek invention, was perfected by the Moslems and introduced into Europe in the tenth century. Besides its use to determine the hour of prayer and the geographical position of Makkah, the astrolabe was invaluable to mariners for nautical observations and was a necessary adjunct of the astrologer's equipment. In the story told by the tailor in the Arabian Nights (no. 29), the glib barber exasperates his customer by trying to find with an astrolabe the precise moment auspicious for shaving. A properly executed astrolabe is a beautiful work of art.

Enamelling found no high favour with Moslem metalworkers but in the application of coloured glazes to earthenware, Moslems were from an early period past masters. Va-

lencia was the Moslem centre of this industry in the West. The importation of its products laid the foundation of the pottery industry at Poitiers.

History of the Arabs
Philip K. Hitti

The Architecture

Mud'ejar workmen were employed all over Spain for the decoration of the churches and private houses, for example of fantastic court yard of Infantado palace at Guadalajara (wadi-al-hijara). They were particularly in request for the canopies of tombs, and for synagogues, as may be seen in the buildings at Toledo now known as 'El Transito' and 'Santa Maria la Blanca'. The Alcazar at Seville was built by Mud'ejar workmen for King Pedro the Cruel, entirely in the Muslims style, and is still used as a royal residence.

Woodwork, Ceramics, Textiles

Mud'ejar workmen excelled above all in minor arts: woodwork, pottery, and textile. The Spanish coffered (artesonado) ceilings have no parallel in Europe-if we except that of the Capella Palatina at Palermo, which is also Moslem work. Their inlaid doors are no less beautiful and individual, and to this day the technical Spanish words of the carpenter's trade are largely Arabic. The various kinds of colored tiles (azulejos), so familiar today in Spain and Portugal are a legacy from the Muslims, as the name applies. Typical Hispano-Moresque ware has a simmering metallic golden lustre varying from Ruby to mother-of-pearl and greenish yellow. The earliest forms of decoration are Byzantine, but the square Kufic characters were soon introduced for decoration; while later, a favorite inscription was 'al-afiya', good health (alafia - prosperity, fate, or blessing). This formula was popularly supposed to have been adopted by the potters as a substitute for the sacred name of **ALLAH**, so that there might be no chance of the piece with that name being broken and the potter consequently losing his soul. But al-alafia is found principally on boards.

Spanish-Moorish silks were hardly less in demand than Spanish-Moorish pottery. They were particularly treasured in Christian churches; even at Canterbury Cathedral several of little silk bags which held the seals of documents, dating from 1264 to 1366, were found to be made of pieces of ancient Spanish silk, the patterns being unmistakable and unequalled for their intricacy and fineness of workmanship. The best surviving

pieces probably date from the end of the twelfth and beginning of the thirteenth century.

Cordova became famous for its leather, known as Cordovan or Cordwain, so that the Cordwainer's company, or at least the name, might be considered, part of her legacy of Arabia. In later years fine and characteristic work was done by Mud'ejar book binders. The Muslims Spanish goldsmiths also achieved a renown; and the workers in other metals took no less pain with such things as enamelled and inscribed sword-hilts, as with such everyday objects as iron keys, the wards of which often take the form of interlacing letters and words in the square Kufic script to which their shape is admirably adapted.

The Legacy of Islam
Sir Thomas Arnold
Oxford - 1931

Arts and Literature

This almost modern spirit of investigation, experimentation and research, which characterized the court of Frederick, marks the beginning of the Italian Renaissance. Italian poetry, letters and music began to blossom under Provencal and Arabic influence. The cultivation of poetry in the vulgar tongue was evidently due to the example of Arabic poets and singers and the metrics of the early popular poetry of Italy, as represented by the carnival songs and the ballata, is fundamentally the same as that of the folk poetry of Andalusia. 'Stanza' is evidently a translation of Arabic bayt, 'house', 'strophe'. But Frederick's greatest single contribution was the founding of the University of Naples (1224), the first in Europe to be established by a definite charter. In it he deposited a large collection of Arabic manuscripts. The works of Aristotle and ibn-Rushd, which he caused to be translated, were used in its curriculum; copies of the translations were sent to the Universities of Paris and Bologna. The University of Naples counted among its pupils Thomas Aquinas, In the fourteenth and following centuries Arabic studies were cultivated in several European universities, including Oxford and Paris.

Since the Norman kings and their successors on the Sicilian throne held not only the island but also Southern Italy, they provided a bridge for the transmission of various elements of Moslem culture into the peninsula and Mid Europe. By the middle of the tenth century traces of Arab learning became clearly noticeable North of Alps. Dante's ideas of the other world may not have been derived from any particular Arabic text,

but they certainly appear to have been of Oriental origin, though drawn by him from the popular lore of Europe. This penetration from the East through various channels is evident in the domain of arts as well as in science and literature. The design of Renaissance campanili, it would seem, was derived from the square North African, more particularly Egyptian, type of minaret. Long after Sicily and the Southern part of the peninsula had reverted to Christian rule, Moslem craftsmen and artists continued to flourish, as evidenced by the mosaics and inscriptions of the Palatine Chapel. The renowned weaving-house established by the Moslem rulers in the royal palace at Palermo supplied European royalty with state robes, which bore Arabic inscriptions. The first Italian textile workers acquired their technical knowledge and models for designs from Sicily. By the beginning of the thirteenth century silk weaving had already become the principal industry in several Italian towns, which exported fabrics imitating the Sicilian stuffs into various parts of Europe. As in Palermo and Cadiz, so in Venice, Ferrara and Pisa, colonies of Oriental craftsmen taught the natives and collaborated with them. So great was the demand for Oriental fabrics that there was a time when no European could have felt really well dressed unless he possessed at last one such garment. During the fifteenth century when opulent Venice was so actively adopting and scattering Moslem fashions in art, books bound in Italian workshops began to assume an Oriental appearance. The peculiar Arabic binding, including the flap that folds over to protect the front edges of the volume, appear on Christian books. At the same time new methods of tooling and decorating leather covers, were also being learned from Oriental artisans in various Italian towns. Venice, moreover, was the home of another industry, the inlaying of brass with gold, silver or red copper, an art, which flourished mainly in al-Mawsil in the twelfth century. On the whole, Sicily as a transmitter of Moslem culture might claim for itself a place next in importance to that of Spain and higher than that of Syria in the period of the Crusades.

In literate the influence was more pervasive. The legends of the Holy Grail have elements of undoubted Syrian origin. The Crusaders must have heard stories from the Kalilah and the Arabian Nights and carried back with them. Chaucer's Squieres Tale is an Arabian Nights story. From oral sources Boccaccio derived the Oriental tales incorporated in his Decameron. To the Crusaders we may also ascribe European to missionary interest in Arabic and other Islamic languages. Men like Raymond Lull († 1315) were convinced by the failure of the Crusades of the futility of the military method in dealing with the 'infidel'. Lull, a Catalan was the first in Europe to promote Oriental studies as an instrument of a pacific Crusade in which persuasion should re-

place violence. In 1276 he founded at Miramar a college of friars for the study of Arabic; it was probably through his influence that in 1311 the Council of Vienna resolved to create chairs of Arabic and Tartar at the Universities of Paris, Louvain and Salamanca.

History of the Arabs
Philip K. Hitti

Agriculture

Agriculture

From what has been said about commerce and industry, it must not be assumed that agriculture was neglected in the Moslem Empire. On the contrary, the Koranic people developed farming to as high a level as did any other people of the medieval world. They terraced the slopes of the mountains in Spain in order to plant them with vineyards, and here as elsewhere they converted many barren wastes into highly productive lands by means of irrigation. Experts attached to the imperial palaces and the mansions of the rich, devoted much attention to ornamental gardening, to the cultivation of shrubs and flowers of rare beauty and delightful fragrance. The variety of products of the Moslem farms and orchards almost passes belief. Cotton, sugar, flex, rice, wheat, spinach, asparagus, apricots, peaches, lemons and olives were cultivated as standard crops almost every where, while bananas, coffee, and oranges were grown in the warmer regions. Some of the farms were great estates, worked in part by serfs and slaves and in part by free peasants as tenants, but the major portion of the land was divided into small farms cultivated by the owners themselves.

Western Civilisations - Their History and Their Culture
Edward McNall Burns - 1941

The Crusades

Men have often thought of what may be called the fatalities of history. Among them has always been counted the duel of East and West. That chapter began in 1096: it ended, if we regard it as closed by the loss of the last Christian foothold on the Syrian mainland, in 1291: it lasted, if we look rather to the lingering relics of the old Crusading impulse, till the navigations of the Portuguese and the discoveries of Columbus.

We only in Spain and Sicily did the civilization of the Muslim attain any height; but in both of these it flourished, and from both of these it transmitted its influence into France and Italy. The philosophy of Cordova and its great teacher Ibne Rushd (Averros) penetrated to the University of Paris; Arab villas, Arab geographers and Arab poets in Palermo under its Norman kings and their successor Frederic II. "The blessings of culture which were given to the West by its contemporary Islamitic elements", it has been said, "are at least as important as the influence of the East during the time of the Crusades."

Christian pressure produced a Muslim reaction. The center of this reaction was Mosul. Here, among the debris of the Seljuq Empire, which had collapsed into fragments even before the first crusade began its course, there emerged about 1127 the figure of the Atabeg Zangi. He extended his power amongst his rivals, and in 1144 captured Edessa from the Latins -the first serious setback to their career. His successor Nur-al-Din (1146-74) was already animated by the religious motive of the counter-crusade (the Jihad); and during his reign his lieutenants, the Kurd Shirkuh and Shirkuh's nephew Saladin (Salah-al-Din), brought Egypt under his sway. Menaced both from Mosul and from Cairo and with the new ardour of the Jihad ready to meet the waning passion of their own crusade, the Latins of the kingdom soon succumbed. In July 1187 they were defeated at Hittin: in October of the same year Jerusalem capitulated. Saladin had obtained 'The goal of his desires', and set free the Mosques of Aqsa, to which **ALLAH** once led in the night, His servant Muhammad[SAW].

Yet there were ways in which the Crusades, through their direction to Syria, and through the Latin state which it temporarily established there affected the development of Western Europe. We may appeal, first and foremost, to the evidence of language - to the Western words, which flowed into Arabic, and the Arabic words, which flowed into Western languages. The borrowed Western words in Arabic are not very numerous. Prutz sites as example inbirur (imperator), kastal (castellum), burj (burgus), and

ghirsh (grossus). The borrowed Arabic words in Western languages are far more abundant. We need only think, caravan and dragoman, jar and syrup, in our own language; and if we turn to the romance languages of the continent-which borrowed directly, while we, for the most part, only borrowed for them-we should realize that the list of Western borrowings from the Arabic may readily be increased (witness words such as douane, gabelle, felucca, chebec, and the like). But there are obvious philological difficulties in the attribution of these borrowings. Palestine is not the only place, or the age of the crusade the only time, in which they may have originated. Spain and Sicily are other possible places of borrowing; and long centuries of contact between the West and the Arab-speaking world-both East and West of Suez; both in the way of commerce and in the way of piracy-are other possible times and ways. The West, it is true, still uses Arabic terms of trade, such as bazaar, dinar, tariff, and zechin; it is still uses Arabic terms of sea-faring, such as admiral and arsenal; it still uses Arabic terms of domestic life such as alcove, carafe, mattress, and sofa, or again amulet, elixir, julep, and talisman; it still uses or has used some Arabic terms of music such as lute and naker.

In this way we may explain the dissemination of new plants and crops and trees from the Levant to the regions of Western Mediterranean-sesame and carob, maize and rice, lemon and melon, apricot and shallots. In this way, too, we may explain the spread into the West of new manufactures and fashion - cottons; muslin from Mosul; baldachins of Baghdad; damasks and damascenes from Damascus; sarcenets or Saracen stuff; samite and dimities and diapers from Byzantium; the atlas (Arabic atlas), a sort of silk-satin manufactured in the East; the rugs and carpet and tapestries from the Near East and Central Asia; lacquers; new colors such as carmine and lilac (the words are both from Arabic); dyes and drugs and spices and scents, such as alum and alcove, cloves and incense, indigo and sandalwood; articles of dress and of fashion, such as camlet and jupes (Arabic jubbah), or powders and glass-mirrors; works of art in pottery, glass, gold, silver, and enamel.

The day to day contact with Muhammadanism in the East-a contact, which brought familiarity, and with it the co-operation with familiarity can breed, weakened the old opposition of faith and un-faith. Not all men in the thirteenth century work of the temper of Frederic II, who used a Saracen army against the pope, corresponded with the Arab scholars, and negotiated with Muhammadans rulers even when Jerusalem itself was in question. But at any rate scholars showed themselves ready to borrow from Arabic philosophers; some began to study Arabic; and a new spirit of comprehension

arose. There is a difference between St. Louis, the survivor of an earlier age, who would argue with an infidel by plunging his sword into his vitals, and the attitude of the University of Paris which could draw even on Arabic Spain for a fisica et meta fisica of Aristotle.

We may say, it is true, that the Crusades began with the Seljuk Turks encamped at Nicaea on the confines of Asia, and that they ended with the Ottoman Turks encamped in Europe itself on the Danube. We may say, again, from another point of view, that after nearly five hundred years all ended as it had begun, with a Frankish protectorate of the holy places in a territory governed by the Muhammadans.

The Legacy of Islam
Sir Thomas Arnold
Oxford – 1931

The Results of the Crusades

By the Crusades all Europe had been wrought up to a fanatical expectation, doomed necessarily to disappointment. From them the papacy had derived prodigious advantages both in money and power. It was now to experience fearful evils. It had largely been promised rewards in this life and also in the world to come, to those who would take up the Cross-; it had deliberately pitted Christianity against Mohammedanism, and staked the authenticity of each on the issue of the conflict. In face of the whole world it had put forth as the true criterion the possession of the holy places, hallowed by the life, the sufferings, the death, the resurrection of the Redeemer. Whatever the result might be, the circumstances under which this had been done were such that there was no concealing, no dissembling. In all Europe there was not a family which had not been pecuniarily involved in the Crusades, perhaps few that had not furnish men. Was it at all to be wondered at that everywhere the people, accustomed to the logic of trial by battle, were terror-stricken when they saw the result? Was it to be wondered at that even still more dreadful heresies spontaneously suggested themselves? Was it at all extraordinary that, if there had been popes sincerely accepting that criterion, the issue should be a Pope who was a sincere misbeliever? Was it extraordinary that there should be a loss of papal prestige? It was the papacy, which had voluntarily, for its own ends, brought things into this evil channel, and that the papacy deserved just retribution of discredit and ruin. It had wrought on the devout temper of religious Europe for its own sinister purposes; it had drained the continent of its blood, and perhaps of what

was more highly prized-its money; it had established a false issue, an unwarrantable criterion, and now came the time for it to reap consequences of a different kind-intellectual revolt among the people, heresy among the clergy. Nor was the pope without eminent comrade in this sin.

Of their direct and professed purposes the Crusades had failed. After two centuries of war, Jerusalem was in the hands of the ferocious Mamluks, and Christian pilgrims came fewer and more fearful than before. The Moslem powers, once tolerant of religious diversity, had been made intolerant by attack. The Palestinian and Syrian ports that had been captured for Italian trade were without exception lost. Moslem civilisation had proved itself superior to the Christian in refinement, comfort, education and war. The magnificent effort of the popes to give Europe peace through a common purpose had been shattered by nationalistic ambitions and the 'crusades' of the popes against emperors.

Knights Templars

The Templars, whose duty it had been to protect the Christian pilgrims on their way to Jerusalem, and had therefore been long and thoroughly familiar with the state of events in Palestine, who had been treading in the same paths as the European populace. Dark rumours had begun to circulate throughout Europe that these Knights, the very vanguard of Christianity had not only proved traitors to their banner, but had actually become Mohammedans - staunch followers of the Koran. On their return from the Holy Land, at the close of the crusades, these knights spread themselves all over Europe to disseminate by stealth their fearful Koranic doctrines and to enjoy the riches, acquired in the service they had rendered. Men find a charm in having it mysteriously and secretly divulged to them that their long-cherished opinions are all a delusion. There was something fascinating in hearing privately, from those who could speak with authority that, after all, Muhammad[SAW] was not an impostor but the author of a pure and noble theism, with a belief of the Prophethood of Christ[AS]; that Sultan Salah ud-Din was not a treacherous assassin, a despicable liar, but a most valiant, courteous, gentle Knight.

The preaching of Koran by whisper by these Templars Knights struck Europe with a shock. To check the disastrous spread of the Koranic doctrines by the Knights, all the Templars in France were simultaneously arrested in the dawn of one day, 13th October 1307 A.D. All of them were sentenced to death and on one occasion, one hundred and thirteen Templars were, in slow succession, burnt at stakes.

A History of The Intellectual Development of Europe
New York - 1875

Nor is Mohammedanism the only religion, which has tried to propagate itself by the sword. It is true, of course, that a holy war waged by Christians is in direct contravention of the spirit of their Founder, while one waged by Mohammedans is in accordance with both the practice and the precept of the Prophet, and, so far, there is no parallel at all between the two religions. The means authorised by Christ for the spread of His religion were moral and spiritual only. The means authorised by Muhammad (peace be upon him) were persuasion and example first; but failing these, the sword.

Yet historically speaking, the contrast between the practice of Christians and Mohammedans has not been so sharp as is often supposed. The Saxon wars of Charles the Great were avowedly religious wars, and differed chiefly from the Syrian wars of Omar and of Ali, from the African wars of Amru and Akbah, and the Spanish wars of Mussa and of Tarik, in that they were much more protracted and vastly less successful. Otto the Great, the best of Charles's successors, used the sword with vigour to extend the external profession of Christianity among the Sclavonian tribes who dwelt along the shores of the Baltic. The Mediaeval Papacy, whatever its other services to progress, was never backward to unfurl the standard of a religious wars, whether against the common enemy of Christendom, or, as more often happened, against a sect of heretics, the Albigenses, or the Waldenses, near home. Nor in point of ferocity, is it clear that religious wars waged by Christians will compare favourably with those of Mohammedans. The Mohammedan wars were never internecine. Even on the field of battle, the conquering Musalman allowed his conquered foe the two other alternatives, of conversion or of tribute. When Abu Bakr first invaded Syria, he charged his troops not to mutilate the dead, not to slay old men, women, and children, not to cut down fruit-trees, nor to kill cattle unless they were needed for food; and these humane precepts served like a code of laws of war during the career of Mohammedan conquest. And this, be it remembered, among Orientals, who had always been remarkable for their

disregard of human life. When we remember, on the other hand, the massacre of 4,500 Pagan Saxons in cold blood by Charles the Great - when we remember the famous answer by which the Papal Legate, in the Albigensian war, quieted the scruples of a too conscientious general, 'Kill all, God will know His own' - when we recall the Spanish Inquisition, the Conquest of Mexico and Peru, the Massacre of St. Bartholomew, and the sack of Magdeburg by Tilly, we shall be disposed never, indeed, to justify religious wars, but to point out that, of the religious wars which the world has seen, the Mohammedan are certainly not the worst - in their object, in their methods, or in their results.

Bosworth Smith
Mohammed and Mohammedanism
London – 1889

Cultural Contacts

In the realm of warfare the influences, as is to be expected, are more noticeable. The use of the crossbow, the wearing of heavy mail by knight and horse and the use of cotton pads under the armour are of Crusading origin. In Syria the Franks adopted the tabor and the naker for their military bands, which hitherto had been served only by trumpets and horns. They learned from the natives how to train carrier pigeons to convey military information and borrowed from them the practice of celebrating victory by illuminations and the knightly sport of the tournament (jarid). In fact several features of the chivalry institution developed on the plains of Syria. The growing use of armorial bearings and heraldic devices was due to contact with Moslem knights. The two headed eagle, the fleur-de-lis and the two keys may be cited as elements of Moslem heraldry of this period. Salah al-Din probably had the eagle in his crest. Most Mamluks bore names of animals the corresponding images of which they blazoned on their shields. Mamluk rulers had different corps, which gave rise to the practice of distinguishing by heraldic designs on shields, banners, badges and coats of arms. Baybars' crests was a lion, like that of ibn-Tulun before him, and Sultan Barquq's (†1398) was the falcon. In Europe coats of arms appear in a rudimentary form at the end of the eleventh century; the beginning of English heraldry dates from the early part of the twelfth century. Among modern Moslems the star and crescent and the lion and sun form the sole remnant of heraldry. 'Azure' (ar. Lazaward) and other terms used in heraldry testify to this connection between the European and Moslem institutions.

In the realm of agriculture, industry and commerce the Crusades produced much greater results than in the realm of intellect. They explain the popularization in the regions of the Western Mediterranean of such new plants and crops as sesame and carob, millet and rice, lemons and melons, apricots and shallots. 'Carob' is Arabic kharrub (originally Assyrian); 'lemon' is Arabic laymun of Indic or Malay origin; and both 'shallot' and 'scallion, preserve the name of the Palestinian town. For many years apricots were called the plums of Damascus. Also there were other trees and products which were simultaneously diffused through Moslem Spain and Sicily, and in certain instances it is not possible to tell whether the bridge was Syria or one of the two other countries. While in the Orient, the Franks acquired new tastes, especially in perfumes, spices, sweetmeats and other tropical products of Arabia and India with which the marts of Syria were well stocked. These tastes later supported the commerce of Italian and Mediterranean cities. Incense and other fragrant gums of Arabia, the damask rose (Rosa damascena) and sweet scents in which Damascus specialized and numerous fragrant volatile oils and attars of Persia became favourites. Alum and aloes figured among the new drugs with which they became acquainted. At the capture of Caesarea in 1101, Genoese, we are told, received as their portion of the booty more than sixteen thousand pounds of pepper. Cloves and other aromatic spices together with pepper and similar condiments came into use in the Occident in the twelfth century, and from the time on no banquet was complete without spiced dishes. Ginger (Ar. and Pers. Zanjabil) was added to the Crusaders' menu in Egypt. More important than all others is sugar (Ar. Sukkar). Europeans had hitherto used honey for sweetening their foods. On the maritime plain of Syria, where children can still be seen sucking sugar-cane, the Franks became acquainted with this plant which has since played such an important role in our domestic economy and medical prescriptions. William of Tyre (ca. 1190), who knew Arabic and wrote the most elaborate medieval account of the Crusades (from 1095 to 1184), has left us interesting observations on the sugar plantations of his native town. Sugar was the first luxury introduced into the West and nothing else so delighted the Western palate. With it went soft drinks, waters tinctured by distillation with roses, violets or other flowers, and all varieties of candy and sweetmeats.

Windmills appear first in Normandy in 1180 and betray Crusading origin. Waterwheels (sing. Noria, from Ar. Naurah) existed in Europe before this period but the Crusaders took back with them an improved type. This Syrian type may still be seen in Germany near Bayreuth. In Syria it goes back to Roman days, but was presumably improved upon by such native engineers as Qaysar ibn-Musafir Ta'asif († 1251), an

Egyptian, who was in the service of the ruler of Hamah and produced the earliest but one of the Arabic celestial globes extant. As early as the days of Yaqut († 1229) and abu-al-Fida († 1331), Hamah was noted for its water- wheel. These wheels, whose perpetual wailing has lulled to sleep countless generation of Hamatites, are still one of the glories of that ancient town.

Not all of the new tested developed were gastronomic. Especially in the matter of fashion, clothing and home furnishing were new desires and demands created. The custom of wearing beards was then spread. Returning Crusaders introduced into their homes the rugs, carpets and tapestries of which Western and Central Asia had for long made a speciality. Fabrics such as muslin, baldachin, damask, sarcenet or Saracen stuff, atlas (from Ar. Atlas), velvet, silk and satin, came to be more appreciated. Jewels manufactured by Damascene and Cairene goldsmiths, toilet articles and powders became much sought after. Mirrors of glass coated with a metallic film replaced these of polished steel. Camlets (sing. khamlah), camel's-hair and fine furs acquired wider vogue. The rosary became familiar. European pilgrims sent home Arab reliquaries for the keeping of Christian relics. With fine clothes and metallic wares went lacquers and dyestuffs, such as indigo, and new colours, such as lilac (fr. Ar. laylak, originally Pers.) came in and crimson (both fe. Ar. Qirmizi). Gradually centres appeared in Europe for manufacturing wares, rugs and cloths in imitation of the Oriental products, as at Arras, whose fabrics became prized. Stained-glass windows became popular in churches. Benjamin of Tudela, who visited Antioch under the Franks, speaks of its manufacture of glass. Oriental works of art in glass, pottery, gold, silver and enamel served as models for European products.

History of the Arabs
Philip K. Hitti

Constantinople destroyed by Christian Crusaders themselves, not by Muslims

With great difficulty, by his false propaganda, Pope Innocent III succeeded in preparing the fourth crusade in A.D. 1202. The venetians consented to furnish a fleet of transports, but the expedition was quickly diverted from its true purpose, the venetians employing the Crusaders for the capture of Zara from the King of Hungary. Still worse, and shameful to be said - partly from the lust of plunder, and partly through ecclesiastical machinations- it again turned aside for an attack upon Constantinople, and took that city by storm A.D. 1204, thereby establishing Latin Christianity in the East-

ern metropolis, but alas, with bloodshed, rape and fire. On be found in any three of the largest cities in France. Even Christian Historians compare with shame the storming of Constantinople by the Catholics with the capture of Jerusalem by Saladin.

Constantinople ruined by Christian Crusaders not Muslims

So fell Constantinople, and fell by the parricidal hands of Christians. The days of retribution for curse she had infliction on Western civilisation were now approaching. In these events she received a first instalment of her punishment. Three hundred years previously, the historian Luitprand, who was sent by the Emperor Otho I to the court of Nicephorus Phocas, say of her, speaking as an eye- witness, "That city, once so wealthy, so flourishing, is now famished, laying, perjured, deceitful, rapacious, greedy, had been pursuing a downward career." Pope Innocent himself was compelled to protest against enormities that had outrun his intentions. He says, the Christian Crusaders themselves practised fornication, incest, and adulteries in the sight of men. They lifted their hands against the aged, children and women, and plundered the treasures of the churches - what is more heinous, the very consecrated vessels - breaking in pieces the most sacred things, carrying off crosses and relic.

With well-dissembled regret, Innocent took the new order of things in the city of Constantinople under his protection. The Bishop of Rome at last appointed the Bishop of Constantinople. The acknowledgement of papal supremacy was completed. Rome and Venice divided between them the ill-gotten gains of their undertaking. If anything had been wanting to open the eyes of Europe, surely what had thus occurred should have been enough.

Startling disclosures that Crusades had nothing religious in them

In fact, through the operation of Crusades, all Europe was tributary to the Pope. He had his fiscal agents in every metropolis; his travelling ones wandering in all directions, in every country, raising revenue by the sale of dispensations for all kinds of offences, real and fictitious money for the sale of appointments, high and low - a steady drain of money from every realm. Fifty years after the time of which we are speaking. Robert Grostete, the Bishop of Lincoln and friend of Roger Bacon, caused to be ascertained the amount received by foreign ecclesiastics in England. He found it to be thrice the income of the king himself.

While thus Innocent III was interfering and intriguing with every court, and laying every people under tribute, he did not for a moment permit his attention to be diverted

from the Crusades, the singular advantages of which to the papacy had now been fully discovered. They had given to the pope a suzerainty in Europe, the control of its military as well as its momentary resources. Not that a man like Innocent could permit himself to be deluded by any hopes of eventual success. The Crusades must inevitably prove, so far as their avowed object was concerned, a failure. The Christian inhabitants of Palestine were degraded and demoralised beyond description. Their ranks were thinned by apostasy to Mohammedanism. In Europe, not only the laity began to discover that the money provided for the war in the Holy Land was diverted from its purpose, and in some inexplicable manner, found its way into Italy - even the clergy could not conceal their suspicions that the proclamation of a Crusade was merely the preparation for swindle. Nevertheless Pope Innocent pressed forward his schemes, goading on Christendom.

Discovery of America

The Koranic people had found out and proved scientifically as early as mid 7th century that the earth with all its territorial and oceanic parts is suspended in space like a ball. In midst of the concave sky suspended in the air, the sky surrounding it on all sides is equidistant, be that from on high or from below or from on sides, it is in the midst of the sky like the yellow of egg in the shell. This was subsequently experimented upon and proved by the great geographers Ibn-e Khurdada, Masudi, Fazal, Hauqal etc, as early as 8th century. These discoveries did not remain in books and seminars but were actually put in to practice. When the Koranic people entered S W Europe, they saw the endless Atlantic Ocean before them and began its exploration immediately in 646 A.D. under the Koranic zeal for observation. The narrative of this discovery goes to say that in the Ocean of Atlantic there are many curiosities, which have been mentioned in details by adventurers who penetrated it on the risk of their lives, some returning back after the adventure in the ocean. The waves are very strong and its dangers are perilous, its beasts are terrible and its winds are full of tempests. There are many Islands, some of which are inhabited, others are submerged. No navigator traverses them but passes by them remaining near their coast.

It was from the town Lisbon that these adventurers known under the name of the tribe of Mugharrarin of Hijaz penetrated the ocean. In the town of Lisbon there is still near Alhmar, may be modern Estonia, a street called Bald al-Mugharrarin. Infact eight persons, all cousins, prepared a number of yachts of mercantile transport, filled them with water and victuals, sufficient for them for several months, then they set sail.

When the wind from the East began to blow, they profited by it to voyage for 11 days. They reached a part of the ocean with strong waves, ill smelling water, numerous shallow places and bad visibility, herds of goats, countless in numbers, pasturing freely without any shepherd in them. Sure of perishing there, the sailors landed there and found a source of water. They captured some of the goats and slaughtered them, but found that the meat was no good. No body used it but kept only the skin and departed, the Southern winds pushing them. After sailing for 12 more days they perceived an Island which seemed inhabited and there were cultivated fields. They sailed that way to find what it contained. But soon barking dogs encircled them. Some men appeared and made them prisoners and transported them to a miserable hamlet situated there.

There the navigators saw people with red skin having no hair on their body, the hair of their head was curly and they were high of stature. Their women were of extra ordinary beauty. The navigators were shut in that house of the village for three days. On the fourth day, some body came to them who talked Arabic. He asked them who they were and why had they come. They gave all necessary information. The enquirer promised very good things and told them that he was the interpreter of the king. The day following this enquiry, they were led before the king, who put them the same question and they gave the same answer telling him that they had undertaken the adventure in the ocean to know what new and curious things were there and also to ascertain where it ended.

Story of Civilisations (7 Vols.)
Harvard University - 1950
(Prof. Gaudfrey Bemombynee Paris University, Prof. Leo Vineer Harvard University, Dr. Gefrey the Great Anthropologist of America, Dr. Krammin, Sir R. F. Gurtcm)

Discovery of America

Discovery of America was not made by Columbus, as claimed in the European literature but by the Muslims, some 500 years before Columbus. This has been proved and established in 'The History of Civilisations' by Prof. Will Durant of New York and by Prof. Dr. Krammin, Dr. Leo Vineer of Harvard University. Dr. Gefrey, the most modern Anthropologist, declared that Koranic people had scored a lead of 500 years on Columbus in discovering America. Dr. Krammin also confirmed discovery of America by the Muslims. A famous linguistic proved that it was only the Arabic words that appear as early as 12th century in the original American language, long before the appearance of Spanish and French words, another proof of Arabs being in America 500 years before Europe.

Encyclopaedia of America

VATICAN MESSAGE TO THE WORLD

Secretariat pour les Non-Chrestiens
Maurice Borrmans
orientations
pour un dialogue
entre
chretiens et musulmans
cerf

The Western intellectual has an impressive calculation of false notions about Islam. There is a very wide gap separating the reality of Islam from the image we have of it in the West. The total erroneous statements made about Islam in the West are sometimes the result of ignorance and sometime of a systematic denigration. The most serious of all the un-truths told about Islam are, however, those dealing with facts; for while mistaken opinions are excusable, the presentation of facts running contrary to the reality is not. It is disturbing to read blatant un-truth in eminently respectable works written by authors who are highly qualified. One must indeed be impressed by the knowledge of the fact that arrangements are being made on the highest level of the hierarchy by Roman Catholics to fight incomprehension and to change the inaccurate views on Islam that are so very widely held. In continuation of this change that has taken place in the last few years, a document has been produced by the Vatican at Rome (Italy) which is very important in that it shows the new position adopted towards Koran. We read in the third addition of this document:

This one position calls for a revision of our attitude towards Koran and critical examination of our prejudices. We should first set about progressively changing the way our Christian brothers see it. This is the most important of all. We must clear away the outdated image inherited from the past or distorted by prejudices and slander and recognise the injustices towards Muslim for which the West, with its Christian education, is to blame.

This Vatican documents is hundred fifty page long. It, therefore expands, on the refutation of classic views emancipating ourselves from worst prejudices held by Christians of Islam and sets out the reality. The documents addresses the following suggestion to Christians:-

Here also we must surrender to a deep purification of our attention. In particular, what is meant by this are certain 'Set Judgements' that are all too, often and too lightly made about Islam. It is essential not to cultivate in the secret of our hearts views such as

these, too easily or arbitrarily arrived at, and which the sincere Muslim finds confusing.

One extremely important view of this kind is the attitude which leads people to repeatedly use the term "**ALLAH**" to mean the God of the Muslims, as if the Muslims believe in a God Who was different from the God of Christians. **ALLAH** means the Divinity in Arabic, it is a single God, implying that a correct transcription can only render the exact meaning of the word with the help of the expression God. For the Muslims, **ALLAH** is none other than the God of Moses and Jesus. The document stresses this fundamental point in the following terms: -

It would seem pointless to maintain that **ALLAH** is not really God, as do certain people in the West. The councillor document have put the above ascertain in its proper place. There is not better way of illustrating Islamic faith in God than by quoting the following extracts from Lumen Gentium, "The Muslims profess the faith of Abraham and worship with us the sole merciful God, Who is the future Judge of men on the Day of Reckoning". One can, therefore, understand the Muslims protest at the all too frequent customs in European Language of saying "**ALLAH**" instead of God. Cultivated Muslims have praised D. Masson's French translation of the Koran for having at least "Dieu" instead of **ALLAH**.

The Vatican documents points out the following: -

ALLAH is the only word that Arabic speaking Christian have for God. Muslims and Christians worship a single God. Islamic fatalism is a widely spread prejudice, the document examines this and quoting the Koran for support, it puts in opposition to this, the notion of the responsibility man has, who is to be judged by his actions.

The document substitutes the widely spread notion of 'Islam – the Religion of fear', with 'Islam – the Religion of Love', based on faith in God. To refuse the falsely spread notion that Muslims morality hardly exists and the other notion, shared by so many Jews and Christians, of Islamic 'fanaticism'. It makes the following comments on this: In fact Islam was hardly any fanatical during its history than the sacred bastions of Christianity.

At this point, the Vatican document quotes expression from the Koran that show how in the West, the expression 'Holy War' has been mistranslated; in Arabic it is al-jihad

fi sabil-**ALLAH** - the efforts on God's road. The efforts to spread Islam and defend it against its aggressors. The Vatican document continues as follows: -

The Jihad is not all the Biblical Kherme; it does not lead to extermination, but to the spreading of God's and man's rights to new lands. Jihad generally followed the rules of war, at the time of the Crusades. Moreover, it was not always the Muslims that perpetrated the worst slaughters.

Finally the documents deals with the prejudice according to which Islam is supposed to be hide-bound religion which keeps its followers in a kind of superannuated Middle Ages, making them unfit to adopt to the technical consequences for the modern Ages. It compares analogous situations observed in Christian countries and states the following: -

> We find, in the traditional expansion of Muslim thought, a principle of evolution in civilian society.

The defence of Islam by the Vatican will surprise many believers today be they Muslims, Jews or Christians. The number of people in the West who are aware of the new attitude adopted by the highest authorities in the Catholic Church is, however, very small. Once one is aware of this fact, it comes as less of a surprise to learn of the actions that sealed this reconciliation. Firstly there was the official visit made by the President of Foreign Affairs at the Vatican to King Faisal of Saudi Arabia, then the official reception given by Pope Paul VI to Grand Ulama of Arabia in 1974. Henceforth one understands more clearly the spiritual significance of the fact that His Grace Bishop Elchinger received the grand Ulama at his Cathedral and invited them to pray in the choir. This they did before Altar, turned towards Makkah. Thus representatives of the Muslim and Christian worlds at their highest level have agreed on the examination of the scriptures in the light of scientific data and knowledge concerning the authenticity of the Gospels, Old Testament, New Testament and Koran.

For a long time in the Christian world, scientific development was opposed by the authority in question. Scientists went into exile, and were burnt at the stakes life Galileo. In the case of Islam the attitude towards science was quite different, the crucial fact being that Koran, while ordering us to cultivate science itself contains a large number of observations on natural phenomena and includes explanatory details which have been seen to be in total agreement with modern scientific data. There is no equal to this in Judeo-Christian Revelations.