

The Religion of ISLAM

"This day have I perfected your religion for you and completed My favor unto you, and have chosen for you as your religion Islam." (Qur'an, Surah V:3)

INTRODUCTION

Islam is a religion based upon the surrender to God who is One. The very name of the religion, AL ISLAM in Arabic, means at once submission and peace, for it is in submitting to God's Will that human beings gain peace in their lives in this world and in the hereafter. The message of Islam concerns God, who in Arabic is called Allah, and it addresses itself to humanity's most profound nature. It concerns men and women as they were created by God--not as fallen beings. Islam therefore considers itself to be not an innovation but a reassertion of the universal truth of all revelation which is God's Oneness.

This truth was asserted by the prophets of old and especially by Abraham, the father of monotheism. Islam reveres all of these prophets including not only Abraham, who is the father of the Arabs as well as of the Jews, but also Moses and Christ. The Prophet and Messenger of God, Muhammad--may peace and blessings be upon him, his family and his companions--, was the last of this long line of prophets and Islam is the last religion until the Day of Judgment. It is the final expression of the Abrahamic tradition. One should in fact properly speak of the Judeo-Christian-Islamic tradition. One should in fact properly speak of the Judeo-Christian-Islamic tradition, for Islam shares with the other Abrahamic religions their sacred history, the basic ethical teachings contained in the Ten Commandments and above all, belief in the One God. And it renews and repeats the true beliefs of Jews and Christians whose scriptures are mentioned as divinely revealed books in Islam's own sacred book, the Quran.

THE QUR'AN

For Muslims, or followers of Islam, the Qur'an is the actual Word of God revealed through the archangel Gabriel to the Prophet of Islam during the twenty-three-years period of his prophetic mission. It was revealed in the Arabic language as a sonoral revelation which the Prophet repeated to his

companions. Arabic became therefore the language of Islam even for non Arab Muslims. Under the direction of the Prophet, the verses and chapters were organized in the order known to Muslims to this day. There is only one text of Qur'an accepted by all schools of Islamic thought and there are no variants.

The Qur'an is the central sacred reality of Islam. The sound of the Qur'an is the first and last sound that a Muslim hears in this life. As the direct Word of God and the embodiment of God's Will, the Qur'an is considered as the guide par excellence for the life of Muslims. It is the source of all Islamic doctrines and ethics. Both the intellectual aspects of Islam and Islamic Law have their source in the Qur'an. Perhaps there is no book revered by any human collectivity as much as the Qur'an is revered by Muslims. Essentially a religion of the book, Islam sees all authentic religions as being associated with a scripture. That is why Muslims call Christians and Jews the "people of the book".

Throughout all its chapters and verses, the Quran emphasizes the significance of knowledge and encourages Muslims to learn and to acquire knowledge not only of God's laws and religious injunctions, in a language rich in its varied terminology, to the importance of seeing, contemplating, and reasoning about the world of creation and its diverse phenomena. It places the gaining of knowledge as the highest religious activity, one that is most pleasing in God's eyes. That is why wherever the message of the Qur'an was accepted and understood, the quest for knowledge flourished.

THE PROPHET OF ISLAM

The Prophet of Islam is loved and revered by Muslims precisely because he was chosen by God to reveal His Word to mankind. The Prophet Muhammad is not considered to be divine but a human being. However, he is seen as the most perfect of human beings, shining like a jewel among stones. He was born in 570 A. D. in one of the most powerful tribes in the Arabia of that time, for it had guardianship over the Ka'bah in Makkah. An orphan brought up by his grandfather and later by his uncle, the young Muhammad displayed exceptional virtue as a trustworthy individual whom members of various tribes would invite to act as arbitrator in their disputes.

At that time the Arabs followed a form of idolatry, each tribe keeping its own idols at the Ka'bah, the cubical structure built originally by Abraham to celebrate the glory of the One God. But the monotheistic message of

Abraham had long become forgotten among the general population of the Arabian peninsula. The young Muhammad, however was a believer in the One God all of his life and never participated in the idolatrous practices of his tribe.

When forty years old, during one of the retreats which he made habitually in a cave on top of a mountain outside Makkah, Muhammad first saw the archangel Gabriel who revealed God's Word to him, the Quran, and announced the Muhammad is the messenger of God. For the next thirteen years he preached the Word of God to the Makkans, inviting them to abandon idolatry and accept the religion of Oneness. A few accepted his call but most Makkans, especially those of his own tribe, opposed him violently, seeing in the new religion a grave danger to their economic as well as social domination based upon their control of the Ka'bah. But the Prophet continued to call the people to Islam and gradually a larger number of men and women began to accept the faith and submit themselves to its teachings. As a result, persecution of Muslims increased until the Prophet was forced to send some of his companions to Abyssina where they were protected by the Christian King.

The Makkan period was also one of intense spiritual experience for the Prophet and the noble companions who formed the nucleus of the new religious community which was soon to spread worldwide. It was during this period that God ordered the direction of prayers to be changed from Jerusalem to Makkah. To this day Jerusalem remains along with Makkah and Madinah one of the holiest cities of Islam.

In 622 A. D. the Prophet was ordered by God to migrate to Yathrib, a city north of Makkah. He followed the Divine Command and left with his followers for that city which henceforth was known as "The City of the Prophet" (Madinat al-nabi) or simply Madinah. This event was so momentous that the Islamic calendar begins with this migration (hijrah).

In Madinah, the Prophet established the first Islamic society which has served as the model for all later Islamic societies. Several battles took place against the invading Makkans which the Muslims won against great odds. Soon more tribes began to join Islam and within a few years most of Arabia had embraced the religion of Islam.

After many trials and eventually successive victories, the Prophet returned triumphantly to Makkah where the people embraced Islam at last. He forgave all his former enemies and marched to the Ka'bah, where he ordered his companion and cousin 'Ali to join him in destroying all the

idols. The Prophet reconstituted the rite of pilgrimage as founded by Abraham. The Prophet then returned to Madinah and made another pilgrimage to Makkah. It was upon returning from this last pilgrim that he delivered his farewell address. Soon he fell ill and after three days died in 632 A. D. in Madinah where he was buried in the chamber of his house next to the first mosque of Islam.

The Practices and traditions (Sunnah) of the Prophet which includes his sayings (Hadith) became the guide for Muslims in the understanding of the Quran and the practice of their religion. The Quran itself asserts that God has chosen in the Prophet an example for Muslims to follow. Besides this emulation of the Prophet in all aspects of life and thought, his sayings were assembled by various scholars. Finally they were codified in books of Hadith where the authentic were separated from the spurious. The Sunnah has always remained, after the Quran, the second source of everything Islamic.

WHAT IS THE ISLAMIC RELIGION?

According to a famous saying of the Prophet Islam consists of five pillars which are as follows: affirmation of the faith (shahadah), that is, witnessing that La ilaha illa 'Llah (There is no divinity but Allah) and Muhammadun rasul Allah (Muhammad is the Messenger of Allah); the five daily prayers (al-salat) which Muslims perform facing Makkah; fasting (al-sawm) from dawn to sunset during the month of Ramadan; making the pilgrimage to Makkah (al-hajj) at least once in a lifetime if one's financial and physical conditions permit it; and paying a 2 1/2% tax (al-zakat) on one's capital which is used for the needs of the community. Muslims are also commanded to exhort others to perform good acts and to abstain from evil. Ethics lies at the heart of Islamic teachings and all men and women are expected to act ethically towards each other at all times. As the Prophet has said, "None of you is a believer until you love for your brother what you love for yourself."

As for faith according to Islam (al-iman), it means having faith in God, His books, His messengers, the Day of Judgment and God's determination of human destiny. It is important to understand that the definition of al-iman refers to books and prophets in the plural thus pointing directly to the universality of revelation and respect for other religions emphasized so much in the Quran. There is also the important concept, al-ihsan or virtue, which means to worship God as if one sees him, knowing that even if one

does not see Him, He sees us. It means to remember God at all times and marks the highest level of being a Muslim.

ISLAMIC LAW (al-Shari'ah)

Islam possesses a religious law called al-Shari'ah in Arabic which governs the life of Muslims and which Muslims consider to be the embodiment of the Will of god. The Shari'ah is contained in principle in the Quran as elaborated and complemented by the Sunnah. On the basis of these principles the schools of this day were developed early in Islamic history. This Law, while being rooted in the sources of the Islamic revelation, is a living body of law which caters to the needs of Islamic society.

Islamic laws are essentially preventative and are not based on harsh punishment except as a last measure. The faith of the Muslim causes him to have respect for the rights of others and Islamic Law is such that it prevents transgression from taking place in most instances. That is why what people consider to be harsh punishments are so rarely in need of being applied.

THE SPREAD OF ISLAM

From the oasis cities of Makkah and Madinah in the Arabian desert, the message of Islam went forth with electrifying speed. Within half a century of the Prophet's death, Islam had spread to three continents. Islam is not, as some imagine in the West, a religion of the sword nor did it spread primarily by means of war. It was only within Arabia, where a crude form of idolatry was rampant, that Islam was propagated by warring against those tribes which did not accept the message of God--whereas Christians and Jews were not forced to convert. Outside of Arabia also the vast lands conquered by the Arab armies in a short period became Muslim not by force of the sword but by the appeal of the new religion. It was faith in One God and emphasis upon His Mercy that brought vast numbers of people into the fold of Islam. The new religion did not coerce people to convert. Many continued to remain Jews and Christians and to this day important communities of the followers of these faiths are found in Muslim lands.

Moreover, the spread of Islam was not limited to its miraculous early expansion outside of Arabia. During later centuries the Turks embraced Islam peacefully as did a large number of the people of the Indian subcontinent and the Malay-speaking world. In Africa also, Islam has

spread during the past two centuries even under the mighty power of European colonial rulers. Today Islam continues to grow not only in Africa but also in Europe and America where Muslims now comprise a notable minority.

ISLAM A WORLD CIVILIZATION

"Thus We have appointed you a middle nation, that you may be witnesses upon mankind." (Quran, surah 11:43)

GENERAL CHARACTERISTICS OF ISLAMIC CIVILIZATION

Islam was destined to become a world religion and to create a civilization which stretched from one end of the globe to the other. Already during the early Muslim caliphates, first the Arabs, then the Persians and later the Turks set about to create classical Islamic civilization. Later, in the 13th century, both Africa and India became great centers of Islamic civilization and soon thereafter Muslim kingdoms were established in the Malay Indonesian world while Chinese Muslims flourished throughout china.

Islam is a religion for all people from whatever race or background they might be. That is why Islamic civilization is based on a unity which stands completely against any racial or ethnic discrimination. Such major racial and ethnic groups as the Arabs, Persians, Turks, Africans, Indians, Chinese and Malays in addition to numerous smaller units embraced Islam and contributed to the building of Islamic civilization. Moreover, Islam was not opposed to learning from the earlier civilizations and incorporating their science, learning, and culture into its own world view, as long as they did not oppose the principles of Islam. Each ethnic and racial group which embraced Islam made its contribution to the one Islamic civilization to which everyone belonged. The sense of brotherhood and sisterhood was so much emphasized that it overcame all local attachments to a particular tribe, race, or language-all of which became subservient to the universal brotherhood and sisterhood of Islam.

The global civilization thus created by Islam permitted people of diverse ethnic backgrounds to work together in cultivation various arts and sciences. Although the civilization was profoundly Islamic, even non

Muslim "people of the book" participated in the intellectual activity whose fruits belonged to everyone. The scientific climate was reminiscent of the present situation in America where scientists and men and women of learning from all over the world are active in the advancement of knowledge which belongs to everyone.

The global civilization created by Islam also succeeded in activating the mind and thought of the people who entered its fold. As a result of Islam, the nomadic Arabs became torch-bearers of science and learning. The Persians who had created a great civilization before the rise of Islam nevertheless produced much more science and learning in the Islamic period than before. The same can be said of the Turks and other peoples who embraced Islam. The religion of Islam was itself responsible not only for the creation of a world civilization in which people of many different ethnic backgrounds participated, but it played a central role in developing intellectual and cultural life on a scale not seen before. For some eight hundred years Arabic remained the major intellectual and scientific language of the world. During the centuries following the rise of Islam, Muslim dynasties ruling in various parts of the Islamic world bore witness to the flowering of Islamic culture and thought. In fact this tradition of intellectual activity was eclipsed only at the beginning of modern times as a result of the weakening of faith among Muslims combined with external domination. And today this activity has begun anew in many parts of the Islamic world now that the Muslims have regained their political independence.

A BRIEF HISTORY OF ISLAM: THE RIGHTLY GUIDED CALIPHS

Upon the death of the Prophet, Abu Bakr, the friend of the Prophet and the first adult male to embrace Islam, became caliph. Abu Bakr ruled for two years to be succeeded by 'Umar who was caliph for a decade and during whose rule Islam spread extensively east and west conquering the Persian empire, Syria and Egypt. It was 'Umar who marched on foot at the end of the Muslim army into Jerusalem and ordered the protection of public treasury and a sophisticated financial administration. He established many of the basic practices of Islamic government.

'Umar was succeeded by 'Uthman who ruled for some twelve years during which time the Islamic expansion continued. He is also known as the caliph who had the definitive text of the Noble Quran copied and sent to the four corners of the Islamic world. He was in turn succeeded by 'Ali who is

known to this day for his eloquent sermons and letters, and also for his bravery. With his death the rule of the "rightly guided" caliphs, who hold a special place of respect in the hearts of Muslims came to an end.

THE CALIPHATES

The Umayyad caliphate established in 661 was to last for about a century. During this time Damascus became the Capital of an Islamic world which stretched from the western borders of China to southern France. Not only did the Islamic conquests continue during this period through North Africa to Spain and France in the West and to Sind, Central Asia and Transoxiana in the East, but the basic social and legal institutions of the newly founded Islamic world were established.

The Abbasids, who succeeded the Umayyads, shifted the capital to Baghdad which soon developed into an incomparable center of learning and culture as well as the administrative and political hear of a vast world.

They ruled for over 500 years but gradually their power waned and they remained only symbolic rulers bestowing legitimacy upon various sultans and princes who wielded actual military power. The Abbasid caliphate was finally abolished when Hulagu, the Mongol ruler, captured Baghdad in 1258, destroying much of the city including its incomparable libraries.

While the Abbasids ruled in Baghdad, a number of powerful dynasties such as the Fatimids, Ayyubids and Mamluks held power in Egypt, Syria and Palestine. The most important event in this area as far as the relation between Islam and the Western world was concerned was the series of Crusades declared by the Pope and espoused by various European kings. The purpose, although political, was outwardly to recapture the Holy Land and especially Jerusalem for Christianity. Although there was at the beginning some success and local European rule was set up in parts of Syria and Palestine, Muslims finally prevailed and in 1187 Saladin, the great Muslim leader, recaptured Jerusalem and defeated the Crusaders.

NORTH AFRICA AND SPAIN

When the Abbasids captured Damascus, one of the Umayyad princes escaped and made the long journey from there to Spain to found Umayyad rule there, thus beginning the golden age of Islam in Spain. Cordoba was established as the capital and soon became Europe's greatest city not only in

population but from the point of view of its cultural and intellectual life. The Umayyads ruled over two centuries until they weakened and were replaced by local rulers.

Meanwhile in North Africa, various local dynasties held sway until two powerful Berber dynasties succeeded in uniting much of North Africa and also Spain in the 12th and 13th centuries. After them this area was ruled once again by local dynasties such as the Sharifids of Morocco who still rule in that country. As for Spain itself, Muslim dynasty was defeated in Granada in 1492 thus bringing nearly eight hundred years of Muslim rule in Spain to an end.

ISLAMIC HISTORY AFTER THE MONGOL INVASION

The Mongols devastated the eastern lands of Islam and ruled from the Sinai Desert to India for a century. But they soon converted to Islam and became known as the Il-Khanids. They were in turn succeeded by Timur and his descendants who made Samarqand their capital and ruled from 1369 to 1500. The sudden rise of Timur delayed the formation and expansion of the Ottoman empire but soon the Ottomans became the dominant power in the Islamic world.

From humble origins the Turks rose to dominate over the whole of Anatolia and even parts of Europe. In 1453 Mehmet the Conqueror captured Constantinople and put an end to the Byzantine empire. The Ottomans conquered much of eastern Europe and nearly the whole of the Arab world, only Morocco and Mauritania in the West and Yemen, Hadramaut and parts of the Arabian peninsula remaining beyond their control. They reached their zenith of power with Suleyman the Magnificent whose armies reached Hungary and Austria. From the 17th century onward with the rise of Western European powers and later Russia, the power of the Ottomans began to wane. But they nevertheless remained a force to be reckoned with until the First World War when they were defeated by Western nations. Soon thereafter Kamal Ataturk gained power in Turkey and abolished the six centuries of rule of the Ottomans in 1924.

While the Ottomans were concerned mostly with the western front of their empire, to the east in Persia a new dynasty called the Safavids came to power in 1502. The Safavids established a powerful state of their own which flourished for over two centuries and became known for the flowering of the arts. Their capital Isfahan, became one of the most beautiful cities with its blue tiled mosques and exquisite houses. The

Afghan invasion of 1736 put an end to Safavid rule and prepared the independence of Afghanistan which occurred formally in the 19th century. Persia itself fell into turmoil until Nader Shah, the last Oriental conqueror, reunited the country and even conquered India. But the rule of the dynasty established by him was short-lived. The Zand dynasty soon took over to be overthrown by the Qajars in 1779 who made Tehran their capital and ruled until 1921 when they were in turn replaced by the Pahlavis.

As for India, Islam entered into the land east of the Indus River peacefully. Gradually Muslims gained political power beginning in the early 13th century. But this period which marked the expansion of both Islam and Islamic culture came to an end with the conquest of much of India in 1526 by Babur, one of the Timurid princes. He established the powerful Mogul empire which produced such famous rulers as Akbar, Jahangir, and Shah Jahan and which lasted, despite the gradual rise of British power in India, until 1857 when it was officially abolished.

Farther east in the Malay world, Islam began to spread in the 12th century in northern Sumatra and soon Muslim kingdoms were established in Java, Sumatra and mainland Malaysia. Despite the colonization of the Malay world, Islam spread in that area covering present day Indonesia, Malaysia, the southern Philippines and southern Thailand, and is still continuing in islands farther east.

As far as Africa is concerned, Islam entered into East Africa at the very beginning of the Islamic period but remained confined to the coast for some time, only the Sudan and Somaliland becoming gradually both Arabized and Islamized. West Africa felt the presence of Islam through North African traders who traveled with their camel caravans south of the Sahara. By the 14th century there were already Muslim sultanates in such areas as Mali, and Timbuctu in West Africa and Harar in East Africa had become seats of Islamic learning.

Gradually Islam penetrated both inland and southward. There also appeared major charismatic figures who inspired intense resistance against European domination. The process of the Islamization of Africa did not cease during the colonial period and continues even today with the result that most Africans are now Muslims carrying on a tradition which has had practically as long a history in certain areas of sub-Saharan Africa as Islam itself.

ISLAM AND KNOWLEDGE

"HE HAS TAUGHT YOU THAT WHICH [HERETOFORE] YOU KNEW NOT" (QURAN, SURAH II:239)

THE ATTITUDE OF THE QURAN AND THE PROPHET TOWARD KNOWLEDGE

Islam is a religion based upon knowledge for it is ultimately knowledge of the Oneness of God combined with faith and total commitment to Him that saves man. The text of the Quran is replete with verses inviting man to use his intellect, to ponder, to think and to know, for the goal of human life is to discover the Truth which is none other than worshipping God in His Oneness. The Hadith literature is also full of references to the importance of knowledge. Such sayings of the Prophet as "Seek knowledge even in China", "Seek knowledge from the cradle to the grave", and "Verily the men of knowledge are the inheritors of the prophets", have echoed throughout the history of Islam and incited Muslims to seek knowledge wherever it might be found. During most of its history, Islamic civilization has been witness to a veritable celebration of knowledge. That is why every traditional Islamic city possessed public and private libraries and some cities like Cordoba and Baghdad boasted of libraries with over 400,000 books. Such cities also had bookstores, some of which sold a large number of titles. That is also why the scholar has always been held in the highest esteem in Islamic society.

THE INTEGRATION OF THE PRE-ISLAMIC SCIENCES

As Islam spread northward into Syria, Egypt, and the Persian empire, it came face to face with the sciences of antiquity whose heritage had been preserved in centers which now became a part of the Islamic world. Alexandria had been a major center of sciences and learning for centuries. The Greek learning cultivated in Alexandria was opposed by the Byzantines who had burned its library long before the advent of Islam. The tradition of Alexandrian learning did not die, however. It was transferred to Antioch and from there farther east to such cities as Edessa by eastern Christians who stood in sharp opposition to Byzantium and wished to have their own independent centers of learning. Moreover, the Persian king, Shapur I, had established Jundishapur in Persia as a second great center of learning matching Antioch. He even invited Indian physicians and

mathematicians to teach in this major seat of learning, in addition to the Christian scholars who taught in Syriac as well as the Persians whose medium of instruction was Pahlavi.

Once Muslims established the new Islamic order during the Umayyad period, they turned their attention to these centers of learning which had been preserved and sought to acquaint themselves with the knowledge taught and cultivated in them. They therefore set about with a concerted effort of translate the philosophical and scientific works which were available to them from not only Greek and Syriac (which was the language of eastern Christian scholars) but also from Pahlavi, the scholarly language of pro-Islamic Persia, and even from Sanskrit. Many of the accomplished translators were Christian Arabs such as Hunayn ibn Ishaq, who was also an outstanding physician, and others Persians such as Ibn Muqaffa', who played a major role in the creation of the new Arabic prose style conducive to the expression of philosophical and scientific writing. The great movement of translation lasted from the beginning of the 8th to the end of the 9th century, reaching its peak with the establishment of the House of Wisdom (Bayt al-hikmah) by the caliph al-Ma'mun at the beginning of the 9th century.

The result of this extensive effort of the Islamic community to confront the challenge of the presence of the various philosophies and sciences of antiquity and to understand and digest them in its own terms and according to its own world view was the translation of a vast corpus of writings into Arabic. Most of the important philosophical and scientific works of Aristotle and his school, much of Plato and the Pythagorean school, and the major works of Greek astronomy, mathematics and medicine such as the Almagest of Ptolemy, The Elements of Euclid, and the works of Hippocrates and Galen, were all rendered into Arabic. Furthermore, important works of astronomy, mathematics and medicine were translated from Pahlavi and Sanskrit. As a result, Arabic became the most important scientific language of the world for many centuries and the depository of much of the wisdom and the sciences of antiquity.

The Muslims did not translate the scientific and philosophical works of other civilizations out of fear of political or economic domination but because the structure of Islam itself is based upon the primacy of knowledge. Nor did they consider these forms of knowing as "un-Islamic" as long as they confirmed the doctrine of God's Oneness which Islam considers to have been at the heart of every authentic revelation from God. Once these sciences and philosophies confirmed the principle of Oneness,

the Muslims considered them as their own. They made them part of their world view and began to cultivate the Islamic sciences based on what they had translated, analyzed, criticized, and assimilated, rejecting what was not in conformity with the Islamic perspective.

THE MATHEMATICAL SCIENCES AND PHYSICS

The Muslim mind has always been attracted to the mathematical sciences in accordance with the "abstract" character of the doctrine of Oneness which lies at the heart of Islam. The mathematical sciences have traditionally included astronomy, mathematics itself and much of what is called physics today. In astronomy the Muslims integrated the astronomical traditions of the Indians, Persians, the ancient Near East and especially the Greeks into a synthesis which began to chart a new chapter in the history of astronomy from the 8th century onward. The *Almagest* of Ptolemy, whose very name in English reveals the Arabic origin of its Latin translation, was thoroughly studied and its planetary theory criticized by several astronomers of both the eastern and western lands of Islam leading to the major critique of the theory by Nasir al-Din al-Tusi and his students, especially Qutb al-Din al-Shirazi, in the 13th century.

The Muslims also observed the heavens carefully and discovered many new stars. The book on stars of 'Abd al-Rahman al-Sufi was in fact translated into Spanish by Alfonso X el Sabio and had a deep influence upon stellar toponymy in European languages. Many star names in English such as Aldabran still recall their Arabic origin. The Muslims carried out many fresh observations which were contained in astronomical tables called *Zij*. One of the acutest of these observers was al-Battani whose work was followed by numerous others. The *Zij* of al-Ma'mun observed in Baghdad, the Hakimite *Zij* of Cairo, the Toledan Tables of al-Zarqali and his associated, the II-Khanid *Zij* of Nasir al-Din al-Tusi observed in Maraghah, and the *Zij* of Ulugh-Beg from Samarqand are among the most famous Islamic astronomical tables. They wielded a great deal of influence upon Western astronomy up to the time of Tycho Brahe. The Muslims were in fact the first to create an astronomical observatory as a scientific institution, this being the observatory of Maraghah in Persia established by al-Tusi. This was indirectly the model for the later European observatories. Many astronomical instruments were developed by Muslims to carry out observation, the most famous being the astrolabe. There existed even mechanical astrolabes perfected by Ibn Samh which must be considered as the ancestor of the mechanical clock.

Astronomical observations also had practical applications including not only finding the direction of Makkah for prayers, but also devising almanacs (the word itself being of Arabic origin). The Muslims also applied their astronomical knowledge to questions of time-keeping and the calendar. The most exact solar calendar existing to this day is the Jalali calendar devised under the direction of 'Umar Khayyam in the 12th century and still in use in Persia and Afghanistan.

As for mathematics proper, like astronomy, it received its direct impetus from the Quran not only because of the mathematical structure related to the text of the Sacred Book, but also because the laws of inheritance delineated in the Quran require rather complicated mathematical solutions. Here again Muslims began by integrating Greek and Indian mathematics. The first great Muslim mathematician, al-Khwarazmi, who lived in the 9th century, wrote a treatise on arithmetic whose Latin translation brought what is known as Arabic numerals to the West. To this day guarismo, derived from his name, means figure or digit in Spanish while algorithm is still used in English. Al-Khwarzmi is also the author of the first book on algebra. This science was developed by Muslims on the basis of earlier Greek and Indian works of a rudimentary nature. The very name algebra comes from the first part of the name of the book of al-Khwarazmi, entitled *Kitab al-jabr wa'l-muqabalah*. Abu Kamil al-Shuja' discussed algebraic equations with five unknowns. The science was further developed by such figures as al-Karaji until it reached its peak with Khayyam who classified by kind and class algebraic equations up to the third degree.

The Muslims also excelled in geometry as reflected in their art. The brothers Banu Musa who lived in the 9th century may be said to be the first outstanding Muslim geometers while their contemporary Thabit ibn Qurrah used the method of exhaustion, giving a glimpse of what was to become integral calculus. Many Muslim mathematicians such as Khayyam and al-Tusi also dealt with the fifth postulate of Euclid and the problems which follow if one tries to prove this postulate within the confines of Euclidin geometry.

Another branch of mathematics developed by Muslims is trigonometry which was established as a distinct branch of mathematics by al-Biruni. The Muslim mathematicians, especially al-Battani, Abu'l-Wafa', Ibn Yunus and Ibn al-Haytham, also developed spherical astronomy and applied it to the solution of astronomy and applied it to the solution of astronomical problems.

The love for the study of magic squares and amicable numbers led Muslims to develop the theory of numbers. Al-Khujandi discovered a particular case of Fermat's theorem that "the sum of two cubes cannot be another cube", while al-Karaji analyzed arithmetic and geometric progressions such as: $1^3+2^3+3^3+\dots+n^3=(1+2+3+\dots+n)^2$. Al-Biruni also dealt with progressions while Ghiyath al-Din Jamshid al-Kashani brought the study of number theory among Muslims to its peak.

In the field of physics the Muslims made contributions in especially three domains. The first was the measurement of specific weights of objects and the study of the balance following upon the work of Archimedes. In this domain the writings of al-Biruni and al-Khazini stand out. Secondly they criticized the Aristotelian theory of projectile motion and tried to quantify this type of motion. The critique of Ibn Sina, Abu'l-Barakat al-Baghdadi, Ibn Bajjah and others led to the development of the idea of impetus and momentum and played an important role in the criticism of Aristotelian physics in the West up to the early writings of Galileo. Thirdly there is the field of optics in which the Islamic sciences produced in Ibn al-Haytham (the Latin Alhzen) who lived in the 11th century, the greatest student of optics between Ptolemy and Witelo. Ibn al-Haytham's main work on optics, the *Kitab al-manazir*, was also well known in the West as *Thesaurus opticus*. Ibn al-Haytham solved many optical problems, one of which is named after him, studied the property of lenses, discovered the *Camera Obscura*, explained correctly the process of vision, studied the structure of the eye, and explained for the first time why the sun and the moon appear larger on the horizon. His interest in optics was carried out two centuries later by Qutb al-Din al-Shirazi and Kamal al-Din al-Farisi. It was Qutb al-Din who gave the first correct explanation of the formation of the rainbow.

It is important to recall that in physics as in many other fields of science the Muslims observed, measured and carried out experiments. They must be credited with having developed what came to be known later as the experimental method.

THE MEDICAL SCIENCES

The Hadiths of the Prophet contain many instructions concerning health including dietary habits; these sayings became the foundation of what came to be known later as "Prophetic medicine" (*al-tibb al-nabawi*). Because of the great attention paid in Islam to the need to take care of the body and to hygiene, early in Islamic history Muslims began to cultivate the field of

medicine turning once again to all the knowledge that was available to them from Greek, Persians and Indian sources. At first the great physicians among Muslims were mostly Christian but by the 9th century Islamic medicine, properly speaking, was born with the appearance of the major compendium, *The Paradise of Wisdom* (Firdaws al-hikmah) by 'Ali ibn Rabban al-Tabari, who synthesized the Hippocratic and Galenic traditions of medicine with those of India and Persia. His student, Muhammad ibn Zakariyya' al-Razi (the Latin Rhazes), was one of the greatest of physicians who emphasized clinical medicine and observation. He was a master of prognosis and psychosomatic medicine and also of anatomy. He was the first to identify and treat smallpox, to use alcohol as an antiseptic and make medical use of mercury as a purgative. His *Kitab al-hawi* (Continens) is the longest work ever written in Islamic medicine and he was recognized as a medical authority in the West up to the 18th century.

The greatest of all Muslim physicians, however, was Ibn Sina who was called "the prince of physicians" in the West. He synthesized Islamic medicine in his major masterpiece, *al-Qanun fi'tibb* (The Canon of Medicine), which is the most famous of all medical books in history. It was the final authority in medical books in history. It was the final authority in medical matters in Europe for nearly six centuries and is still taught wherever Islamic medicine has survived to this day in such land as Pakistan and India. Ibn Sina discovered many drugs and identified and treated several ailments such as meningitis but his greatest contribution was in the philosophy of medicine. He created a system of medicine within which medical practice could be carried out and in which physical and psychological factors, drugs and diet are combined.

After Ibn Sina, Islamic medicine divided into several branches. In the Arab world Egypt remained a major center for the study of medicine, especially ophthalmology which reached its peak at the court of al-Hakim. Cairo possessed excellent hospitals which also drew physicians from other lands including Ibn Butlan, author of the famous *Calendar of Health*, and Ibn Nafis who discovered the lesser or pulmonary circulation of the blood long before Michael Servetus, who is usually credited with the discovery.

As for the western lands of Islam including Spain, this area was likewise witness to the appearance of outstanding physicians such as Sa'd al-Katib of Cordoba who composed a treatise on gynecology, and the greatest Muslim figure in surgery, the 12th century Abu'l-Qasim al-Zahrawi (the Latin Albucasis) whose medical masterpiece *Kitab al-tasrif* was well known in the West as *Concessio*. One must also mention the Ibn Zuhr family which produced several outstanding physicians and Abu Marwan 'Abd al-Malik

who was the Maghrib's most outstanding clinical physician. The well known Spanish philosophers, Ibn Tufayl and Ibn Rushd, were also outstanding physicians.

Islamic medicine continued in Persia and the other eastern lands of the Islamic world under the influence of Ibn Sina with the appearance of major Persian medical compendia such as the Treasury of Sharaf al-Din al-Jurjani and the commentaries upon the Canon by Fakhr al-Din al-Razi and Qutb al-Din al-Shirazi. Even after the Mongol invasion, medical studies continued as can be seen in the work of Rashid al-Din Fadlallah, and for the first time there appeared translations of Chinese medicine and interest in acupuncture among Muslims. The Islamic medical tradition was revived in Safavid period when several diseases such as the first time and much attention was paid to pharmacology. Many Persian doctors such as 'Ayn al-Mulk of Shiraz also traveled to India at this time to usher in golden age of Islamic medicine in the subcontinent and to plant the seed of the Islamic medical tradition which continues to flourish to this day in the soil of that land.

The Ottoman world was also an arena of great medical activity derived from the heritage of Ibn Sina. The Ottoman Turks were especially known for the creation of major hospitals and medical centers. These included not only units for the care of the physically ill, but also wards for patients with psychological ailments. The Ottomans were also the first to receive the influence of modern European medicine in both medicine and pharmacology.

In mentioning Islamic hospitals it is necessary to mention that all major Islamic cities had hospitals; some like those of Baghdad were teaching hospitals while some like the Nasiri hospital of Cairo had thousands of beds for patients with almost any type of illness. Hygiene in these hospitals was greatly emphasized and al-Razi had even written a treatise on hygiene in hospitals. Some hospitals also specialized in particular diseases including psychological ones. Cairo even had a hospital which specialized in patients having insomnia.

Islamic medical authorities were also always concerned with the significance of pharmacology and many important works such as the Canon have whole books devoted to the subject. The Muslims became heir not only to the pharmacological knowledge of the Greeks as contained in the works of Dioscorides, but also the vast herbal pharmacopias of the Persians and Indians. They also studied the medical effects of many drugs, especially herbs, themselves. The greatest contributions in this field came from Maghribi scientists such as Ibn JulJul, Ibn al-Salt and the most original of

Muslim pharmacologists, the 12th century scientist, al-Ghafiqi, whose Book of Simple Drugs provides the best descriptions of the medical properties of plants known to Muslims. Islamic medicine combined the use of drugs for medical purposes with dietary considerations and a whole lifestyle derived from the teachings of Islam to create a synthesis which has not died out to this day despite the introduction of modern medicine into most of the Islamic world.

NATURAL HISTORY AND GEOGRAPHY

The vast expanse of the Islamic world enabled the Muslims to develop natural history based not only on the Mediterranean world, as was the case of the Greek natural historians, but also on most of the Eurasian and even African land masses. Knowledge of minerals, plants and animals was assembled from areas as far away as the Malay world and synthesized for the first time by Ibn Sina in his *Kitab al-Shifa'* (The Book of Healing). Such major natural and human history. Al-Biruni likewise in his study of India turned to the natural history and even geology of the region, describing correctly the sedimentary nature of the Ganges basin. He also wrote the most outstanding Muslim work on mineralogy.

As for botany, the most important treatises were composed in the 12th century in Spain with the appearance of the work of al-Ghafiqi. This is also the period when the best known Arabic work on agriculture, *The Kitab al-falahah*, was written. The Muslims also showed much interest in zoology especially in horses as witnessed by the classical text of al-Jawaliqi, and in falcons and other hunting birds. The works of al-Jahiz and al-Damiri are especially famous in the field of zoology and deal with the literary, moral and even theological dimensions of the study of animals as well as the purely zoological aspects of the subject. This is also true of a whole class of writings on the "wonders of creation" of which the book of Abu Yahya al-Qazwini, the *Aja'ib al-makhluqat* (The Wonders of Creation) is perhaps the most famous.

Likewise in geography, Muslims were able to extend their horizons far beyond the world of Ptolemy. As a result of travel over land and by sea and the facile exchange of ideas made possible by the unified structure of the Islamic world and the hajj which enables pilgrims from all over the Islamic world to gather and exchange ideas in addition to visiting the House of God, a vast amount of knowledge of areas from the Pacific to the Atlantic was assembled. The Muslim geography of practically the whole globe minus the Americas, dividing the earth into the traditional seven

climates each of which they studied carefully from both a geographical and climactic point of view. They also began to draw maps some of which reveal with remarkable accuracy many features such as the origin of the Nile, not discovered in the West until much later. The foremost among Muslim geographers was Abu 'Abdallah al-drisi, who worked at the court of Roger II in Sicily and who dedicated his famous book, Kitab al-rujari (The Book of Roger) to him. His maps are among the great achievements of Islamic Science. It was in fact with the help of Muslim geographers and navigators that Magellan crossed the Cape of Good Hope into the Indian Ocean. Even Columbus made use of their knowledge in his discovery of America.

CHEMISTRY

The very name alchemy as well as its derivative chemistry come from the Arabic al-Kimiya'. The Muslims mastered Alexandrian and very early in their history, produced their greatest alchemist, Jabir ibn Hayyan (the Latin Geber) who lived in the 8th century. Putting the cosmological and symbolic aspects of alchemy aside, one can assert that this art led to much experimentation with various materials and in the hands of Muhammad Ibn Zakariyya' al-Razi was converted into the science of chemistry. To this day certain chemical instruments such as the alembic (al-'ambiq) still bear their original Arabic names and the mercury-sulphur theory of Islamic alchemy remains as the foundation of the acid-base theory of chemistry. Al-Razi's division of materials into animal, vegetable and mineral is still prevalent and a vast body of knowledge of materials accumulated by Islamic alchemists and chemists has survived over the centuries in both East and West. For example the use of dyes in objects of Islamic art ranging from carpets to miniatures or the making of glass have much to do with this branch of learning which the West learned completely from Islamic sources since alchemy was not studied and practiced in the West before the translation of Arabic texts into Latin in the 11th century.

TECHNOLOGY

Islam inherited the millennial experience in various forms of technology from the peoples who entered the fold of Islam and the nations which became part of Dar al-islam. A wide range of technological knowledge, from the building of water wheels by the Romans to the underground water system by the Persians, became part and parcel of the technology of the newly founded order.

Muslims also imported certain kinds of technology from the Far East such as paper which they brought from China and whose technology they later transmitted to the West. They also developed many forms of technology on the basis of earlier existing knowledge such as the metallurgical art making the famous Damascene swords, and art which goes back to the making of steel several thousand years before on the Iranian Plateau. Likewise Muslims developed new architectural techniques of vaulting, methods of ventilation, preparations of dyes, techniques of weaving, technologies related to irrigation and numerous other forms of technology, some of which survive to this day.

In general Islamic civilization emphasized the harmony between man and nature as seen in traditional design of Islamic cities. Maximum use was made of natural elements and forces, and men built in harmony with, not in opposition to nature. Some of the Muslim technological feats such as dams which have survived for over a millennium, domes which can withstand earthquakes, and steel which reveals incredible metallurgical know-how, attest to the exceptional attainment of Muslims in many fields of technology. In fact it was a vastly superior technology that first impressed the Crusaders in their unsuccessful attempt to capture the Holy Land and much of this technology was brought back by the Crusaders to the rest of Europe.

ARCHITECTURE

One of the major achievements of Islamic civilization is architecture which combines technology and art. The great masterpieces of Islamic architecture from the Cordoba Mosque and the Dome of Rock in Jerusalem to the Taj Mahal in India display this perfect wedding between the artistic principles of Islam and remarkable technological know-how. Much of the outstanding medieval architecture of the West is in fact indebted to the techniques of Islamic architecture. When one views the Notre Dame in Paris or some other Gothic cathedral, one is reminded of the building techniques which traveled from Muslim Cordoba northward. Gothic arches as well as interior courtyards' of so many medieval and Renaissance European structures remind the viewer of the Islamic architectural examples from which they originally drew. In fact the great medieval European architecture can also be directly experienced in the Moorish style found not only in Spain and Latin America, but in the southwestern United States as well.

THE INFLUENCE OF ISLAMIC SCIENCE AND LEARNING UPON THE WEST

The oldest university in the world which is still functioning is the eleven hundred-year-old Islamic University of Fez, Morocco, known as the Qarawiyyin. This old tradition of Islamic learning influenced the West greatly through Spain. In this land where Muslims, Christians and Jews lived for the most part peacefully for many centuries, translations began to be made in the 11th century mostly in Toledo of Islamic works into Latin often through the intermediary of Jewish scholars most of whom knew Arabic and often wrote in Arabic. As a result of these translations, Islamic thought and through it much of Greek thought became known to the West and Western schools of learning began to flourish. Even the Islamic educational system was emulated in Europe and to this day the term chair in a university reflects the Arabic Kursi (literally seat) upon which a teacher would sit to teach his students in the Madrasah (school of higher learning). As European civilization grew and reached the high Middle Ages, there was hardly a field of learning or a form of art, whether it was literature or architecture, where there was not some influence of Islam present. Islamic learning became in this way part and parcel of Western civilization even if with the advent of the Renaissance, the West not only turned against its own medieval past but also sought to forget the long relation it had with the Islamic world, one which was based on intellectual respect despite religious opposition.

ISLAM IN THE MODERN WORLD

"Most surely man is in loss, except those who believe and do good, and enjoin on each other truth, and enjoin of each other patience" (Qurna, Surah CIII:2-3).

THE AFTERMATH OF THE COLONIAL PERIOD

At the height of European colonial expansion in the 19th century, most of the Islamic world was under colonial rule with the exception of a few regions such as the heart of the Ottoman empire, Persia, Afghanistan, Yemen and certain parts of Arabia. But even these areas were under foreign influence or, in the case of the Ottomans, under constant threat.

After the First World War with the breakup of the Ottoman empire, a number of Arab states such as Iraq became independent, others like Jordan were created as a new entity and yet others like Palestine, Syria and Lebanon were either mandated or turned into French colonies. As for Arabia, it was at this time that Saudi Arabia became finally consolidated. As for other parts of the Islamic world, Egypt which had been ruled by the descendants of Muhammad Ali since the 19th century became more independent as a result of the fall of the Ottomans, Turkey was turned into a secular republic by Ataturk, and the Pahlavi dynasty began a new chapter in Persia where its name reverted to its eastern traditional form of Iran. But most of the rest of the Islamic world remained under colonial rule.

It was only after the Second World War and the dismemberment of the British, French, Dutch and Spanish empires that the rest of the Islamic world gained its independence. In the Arab world, Syria and Lebanon became independent at the end of the war as did Libya and shaykdoms around the Gulf and the Arabian Sea by the 1960's. The North African countries of Tunisia, Morocco and Algeria had to fight a difficult and, in the case of Algeria, long and protracted war to gain their freedom which did not come until a decade later for Tunisia and Morocco and two decades later for Algeria. Only Palestine did not become independent but was partitioned in 1948 with the establishment of the state of Israel.

In India Muslims participated in the freedom movement against British rule along with Hindus and when independence finally came in 1947, they were able to create their own homeland, Pakistan, which came into being for the sake of Islam and became the most populated Muslim state although many Muslims remained in India. In 1971, however, the two parts of the state broke up, East Pakistan becoming Bangladesh. Farther east still, the Indonesians finally gained their independence from the Dutch and the Malays theirs from Britain. At first Singapore was part of Malaysia but it separated in 1963 to become an independent state. Small colonies still persisted in the area and continued to seek their independence, the kingdom of Brunei becoming independent as recently as 1984.

In Africa also major countries with large or majority Muslim populations such as Nigeria, Senegal and Tanzania began to gain their independence in the 1950's and 1960's with the result that by the end of the decade of the 60's most parts of the Islamic world were formed into independent national states. There were, however, exceptions. The Muslim states in the Soviet Union failed to gain their autonomy or independence. The same holds true for Sinkiang (called Eastern Turkestan by Muslim geographers) while in

Erirea and the southern Philippines Muslim independence movements still continue.

While the world of Islam has entered into the modern world in the form of national states, continuous attempts are made to create closer cooperation within the Islamic world as a whole and to bring about greater unity. This is seen not only in the meetings of the Muslim heads of state and the establishment of the OIC (Organization of Islamic Countries) with its own secretariat, but also in the creation of institutions dealing with the whole of the Islamic world. Among the most important of these is the Muslim World League (Rabitat al-Alam Al-Islami) with its headquarters in Makkah, Saudi Arabia has in fact played a pivotal role in the creation and maintenance of such organizations.

THE REVIVAL AND REASSERTATION OF ISLAM

Muslims did not wish to gain only political independence, They also wished to assert their own religious and cultural identity. From the 18th century onward Muslim reformers appeared upon the scene who sought to reassert the teachings of Islam and to reform society on the basis of Islamic teachings. One of the first among this group was Muhammad ibn 'Abd al-Wahhab, who hailed from the Arabian peninsula and died there in 1792. This reformer was supported by Muhammad ibn al-Sa'ud, the founder to the first Saudi State. With this support Muhammad ibn 'Abd al-Wahhab was able to spread his teachings not only in Arabia but even beyond its borders to other Islamic lands where his reforms continue to wield influence to this day.

In the 19th century Islamic assertion took several different forms ranging from the Mahdi movement of the Sudan and the Sanusiyyah in North Africa which fought wars against European colonizers, to educational movements such as that of Aligarh in India aiming to reeducate Muslims. In Egypt which, because of al-Azhar University, remains to this day central to Islamic learning, a number of reformers appear, each addressing some aspect of Islamic thought. Some were concerned more with law, others economics, and yet others the challenges posed by Western civilization with its powerful science and technology. These included Jamal al-Din al Afghani who hailed originally from Persia but settled in Cairo and who was the great champion of Pan-Islamism, that is the movement to unite the Islamic world politically as well as religiously. His student, Muhammad 'Abduh, who became the rector of al-Azhar, was also very influential in Islamic theology and thought. Also of considerable influence was his Syrian

student, Rashid Rida, who held a position closer to that of 'Abd al-Wahhab and stood for the strict application of the Shari'ah.

Among the most famous of these thinkers is Muhammad Iqbal, the outstanding poet and philosopher who is considered as the father of Pakistan. Moreover, as Western influence began to penetrate more deeply into the fiber of Islamic society, organizations gradually grew up whose goal was to reform society in practice along Islamic lines and prevent its secularization. These included the Muslim Brotherhood (Ikhwan al-Muslimin) founded in Egypt and with branches in many Muslim countries, and the Jama'at-I Islami of Pakistan founded by the influential Mawlana Mawdudi. These organizations have been usually peaceful and have sought to reestablish an Islamic order through education. During the last two decades, however, as a result of the frustration of many Muslims in the face of pressures coming from a secularized outside world, some have sought to reject the negative aspects of Western thought and culture and to return to an Islamic society based completely on the application of the Shari'ah.

Today in every Muslim country there are strong movements to preserve and propagate Islamic teachings. In countries such as Saudi Arabia Islamic Law is already being applied and in fact is the reason for the prosperity, development and stability of the country. In other countries where Islamic Law is not being applied, however, most of the effort of Islamic movements is spent in making possible the full application of the Shari'ah so that the nation can enjoy prosperity along with the fulfillment of the faith of its people. In any case the widespread desire for Muslims to have the religious law of Islam applied and to reassert their religious values and their own identity must not be equated with exceptional violent eruptions which do exist but which are usually treated sensationally and taken out of proportion by the mass media in the West.

EDUCATION AND SCIENCE IN THE ISLAMIC WORLD

In seeking to live successfully in the modern world, in independence and according to Islamic principles, Muslim countries have been emphasizing a great deal the significance of the role of education and the importance of mastering Western science and technology. Already in the 19th century, certain Muslim countries such as Egypt, Ottoman Turkey and Persia established institutions of higher learning where the modern sciences and especially medicine were taught. During this century educational institutions at all levels have proliferated throughout the Islamic world.

Nearly every science ranging from mathematics to biology as well as various fields of modern technology are taught in these institutions and some notable scientists have been produced by the Islamic world, men and women who have often combined education in these institutions with training in the West.

In various part of the Islamic world there is, however, a sense that educational institutions must be expanded and also have their standards improved to the level of the best institutions in the world in various fields of learning especially science and technology. At the same time there is an awareness that the educational system must be based totally on Islamic principles and the influence of alien cultural and ethical values and norms, to the extent that they are negative, be diminished. To remedy this problem a number of international Islamic educational conferences have been held, the first one in Makkah in 19tt, and the foremost thinkers of the Islamic world have been brought together to study and ponder over the question of the relation between Islam and modern science. This is an ongoing process which is at the center of attention in many part of the Islamic world and which indicates the significance of educational questions in the Islamic world today.

THE CASE OF SAUDI ARABIA

Because of the presence of the holy cities of Makkah and Madinah in its midst, Saudi Arabia is the heartland and center of the Islamic world and its development is of great significance for the Islamic world as a whole. It is, therefore, necessary to deal with it separately albeit briefly. Already in the 18th century, the Sa'ud family in Najd in alliance with 'Adba al-Wahhab and their followers became a political power to be reckoned with. In the early 19th century the newly established Saudi power created by Muhammad ibn Sa'ud united much of Arabia and even influenced other parts of the Muslim world. The Ottomans, wary of the rise of this new and independent power, asked Muhammad Ali, the ruler of Egypt, to crush the new movement. After several campaigns, Muhammad Ali succeeded and the first Saudi state ended. A second Saudi state was established briefly in 19th century. Finally toward the end of the century 'Abd al-Aziz ibn Sa'ud, an exceptionally gifted military leader and statesman, succeeded against considerable odds to overcome external and internal opposition, especially of the Rashid family, to recapture Riyadh with a small number of men in 1902 and from there to extend his power over the rest of Najd and finally the Hijaz and Asir. By 1926 he had gained control of Makkah, Jeddah and Madinah and was recognized as the king of the vast area which henceforth

became known as Saudi Arabia. The Saudi family rules to this day in that land, considering itself first and foremost as Khadim al-Haramayn, that is, servant of the two holy cities of Makkah and Madinah.

With oil discovered in the late 30's in Saudi Arabia, the country became transformed rapidly from a predominantly Bedouin society to a country with major urban centers, ports, a vast network of highways, and the most modern communications systems. From the 1950's to the 1970's more financial resources were used in the building of Saudi Arabia than in any other country during a comparable period. The result was a vast transformation of the land and the life of its inhabitants, while at the same time Islamic Law has continued to be strictly observed and Islam continues to be the guiding principle of society.

Besides the adaptation of modern technology and the creation of major industries which include not only the oil industry but petrochemicals and electronics, Saudi Arabia has concentrated upon the training of its human resources and educational development. Major universities have been established starting in the 1960's and today the country boasts of not only such religious universities as the Umm al-qura in Makkah, the Islamic University of Madinah, and Imam Muhammad ibn Sa'ud Islamic University in Riyadh, but also the King Sa'ud University in Riyadh with 35,000 students, the King 'Abdal-'Aziz University in Jeddah, and the King Fahd University of Petroleum and Minerals of Dhahran, all of which provide excellent programs in the sciences and technology. Saudi Arabia also has an extensive program of sending students to America and Europe, mostly in technical fields. Some of these students have also participated in scientific and technological research in the West. The first Muslim astronaut was in fact from Saudi Arabia. This pioneer, Prince Sultan bin Salman bin Abdul Aziz, flew in the shuttle Discovery in 1985 and launched the first Arab satellite. Important Islamic research institutions have also been established in Saudi Arabia to encourage scientific and scholarly activity. These include the King Faisal Islamic Foundation which provides major annual awards in the medical and scientific fields and the King Abd al-Aziz Scientific City which sponsors a wide range of original scientific research.

The Saudis have also spent much of their oil wealth in welfare and health projects both within Saudi Arabia and throughout the Islamic world. Their concern for Islamic matters is shown not only in the building of numerous mosques and the support of Islamic programs throughout the world, but most of all in their care for the pilgrims who come annually to perform the rites of hajj from all over the world. Thanks to modern methods of transportation, the number of pilgrims has increased from a few tens of

thousands fifty or sixty years ago to some two million today. To care for the greatest annual assembly on earth is a stupendous task which the Saudis have carried out successfully over the years. They have built a special airport in Jeddah for the pilgrims, the building being one of the masterpieces of contemporary architecture, and have expanded greatly the areas of the sanctuary (human) of both Makkah and Madianh. The treatment of the problems of the hajj represent perhaps the best example of the Saudis' attempt to apply the possibilities of modern technology to specifically Islamic needs. It symbolizes the intention of Saudi Arabia to make use of modern science and technology white reaming a profoundly Islamic society.

CONCLUSION

The Islamic world remains today a vast land stretching from the Atlantic to the Pacific, with an important presence in Europe and America, animated by the teachings of Islam and seeking to assert its own identity. Despite the presence of nationalism and various secular ideologies in their midst, Muslims various secular ideologies in their midst, Muslims wish to live in the modern world but without simply imitating blindly the ways followed by the West. The Islamic world wishes to live at peace with the West as well as the East but at the same time not to be dominated by them. It wishes to devote its resources and energies to building a better lift for its people on the basis of the teachings of Islam and not to squander its resources in either internal or external conflicts. It seeds finally to create better understanding with the West and to be better understanding each other better that they can serve their own people more successfully and also contribute to a better life for the whole of humanity.