بسم الله الرحمن الرحيم

The object of this publication, produced by the Ahmadiyya Muslim Community, is to educate, enlighten and inform its readers on religious, social, economic and political issues with particular emphasis on Islam.

All correspondence should be forwarded directly to:

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Review of Religions
The London Mosque
16 Gressenhall Road
London, SW18 5QL
United Kingdom

ISSN No. 0034-6721

CONTENTS – September 2001, Vol.96, No.9

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Editorial

Islam means 'peace and submission to the will of Allah'. In these troubled times, this is often forgotten as 'Islam' is paired with words like 'terrorist', militant and 'suicide bomber'. Such terms are wholly contradictory to Islamic practice and teachings and one wonders why such a situation has come about.

In this month's *Review of Religions*, we conclude the article detailing the lives of the Caliphs who succeeded the Holy Prophet(sa). Although once Caliphate ceased the Muslim world still enjoyed many years of peace and scientific development, it was this move away from a leadership, which united all Muslims that eventually led to the break up of the Islamic empire. Muslims began to forget the true meaning of Islam.

As the Promised Messiah(as) reminds us in this month's except from *Malfoozat*, 'Success without the Qur'an is an impossible and difficult task and the thought of achieving such success is just wishful thinking. One should keep before one the example of the Companions of the Holy Prophet(sa) and see how they followed the Holy Prophet(sa) and how they kept their religion paramount, above all else.'

In her article, Aliya Latif reminds us to give faith in Allah precedence over all other distractions and stresses the need for prayer in achieving this. This echoes our selection from *Malfoozat* where the Promised Messiah(as) writes 'The key to the victories and successes of Muslims was the strength of their faith.' Writing about the state of Muslims in his day, he says 'Until the Muslims turn to the Holy Qur'an and until there develops in them belief and faith, their situation will not improve. Respect and an upturn in their fortunes will come from the same direction as was the case before.'

It is therefore up to the Muslims of today to remind themselves of the basics of true Islam by referring to the teachings of the Holy Qur'an and the practice of the Holy Prophet(as). Only by doing so can they begin to reverse the destructive image of Islam that is currently in vogue. It is worth remembering the example of the great leader Salahuddin who was revered by both the East and the West because of his exemplarily conduct during times of war. However he was only following the practice of the Holy Prophet(sa) and the teachings of Islam but in doing so he earned himself a place in history.

Notes and Comments

War of the World

A Horrific Atrocity

Tuesday 11 September 2001 will be a day remembered by Americans everywhere - indeed it may turn out to be a day that the whole world will remember. For it was the day that the financial and military heart of the US were devastated by terrorist attacks. The twin towers of the World Trade Centre in New York were dramatically razed to the ground as two passenger planes were smashed into them, causing utter destruction and chaos in the vicinity. It was shocking to see such mighty structures reduced to rubble, with those left within them being crushed beyond recognition. Then, as if to re-enforce a sinister message, the Pentagon too was struck by another passenger plane, destroying one side of this global command centre. Over 6,000 people were killed by this despicable act of terror. The atrocity stunned the world into silence.

Few in America escaped its consequences. The entire country was ground to a halt with all bridges and tunnels being closed and all flights grounded. President Bush lashed out against the unknown terrorists and news wires flooded the world with the usual suspects. However, even as the dust settled over the tombstone of the World Trade Centre, one name was being spelt out right across the globe as the chief suspect of this attack – Osama Bin Laden – and, predictably, Islam too was presented as a religion of terror and violence.

Islam and Terrorism

Religious terrorism is a contradiction in terms on the basis of both divine instruction and human rationale. Anyone who knows anything about religion will know that no divine religion supports violence in any form and for any reason. It is beyond belief that God would instruct His creation to act destructively, for human compassion and the love of God are but two sides of the same coin – you cannot claim to believe in one without inextricably believing in the other. Islam in particular has laid such an emphasis on peace and non-violence that even if a war were to erupt, Muslims are strictly forbidden from killing civilians, women and children, and from destroying property. In fact the teachings oblige Muslims to respect not only human life but also animal life, as Muslims are forbidden to slaughter animals during battle. The message therefore is crystal clear, that the sanctity of life is paramount to the Islamic creed.

One can be sure that when the world mourned the loss of life in New York, Muslims and non-Muslims were united in grief over this act of murder. In fact, at times like these, it is futile to focus on the behaviour of just Muslims, as this was an act against humanity that cut right across spectrum of religious diversity. The perpetrators of this crime were not Muslims, Christians, Jews or followers of any other religion – they were the antithesis of all that religion stands for and they were rightly condemned by the whole world.

Despite this it was unfortunate to note that media in general steamed ahead with its projection of Islam as the ideological instigator of such horror. The flood of information and opinion that made its way across the airwaves and printing presses drowned out the true Islamic (and indeed religious) perspective on such issues. Instead, the peaceful religion of Islam was replaced with a rather blunt and sinister political force that was allegedly rooted in Islamic teachings. The words 'Islamic terrorists'and 'Islamic fundamentalists' were on the lips of every bystander that cared to believe the media's every word. The media's irresponsibility no doubt helped to stoke up racist fervour that led to sporadic attacks against Muslim and non-Muslim Asians around the world.

Some political leaders, however, spoke out against such unjust actions. Without questioning the underlying motives, it was refreshing to see them at least speak against such actions. George Bush spoke of Islam as a peace-loving religion and British Prime Minister said that, *'What happened in the US was not the work of Islamic terrorists, it was not the work of Muslim terrorists. It was the work of terrorists pure and simple. We must not honour them with any misguided religious justification.'* and added that, *'…our fight is not with Islam.'* In other words they said what Muslims have been saying all along, that associating terrorist acts with Islam is granting terrorists a dignity that they do not deserve.

The same approach that is taken with terrorists operating from Christian or Jewish countries should be taken for those that operate out of Islamic states – i.e. that they must be disassociated from religion completely as they are totally against religious principles. Respect for humanity is central to all religions and Muslims, Christians and Jews as well as others must unite to reject the labelling of any such violence with divine religions, otherwise it would be nothing short of labelling God Himself as a violent Being. It is the duty of all faiths to highlight this so that the facts about true religion are known.

Political Jungles

But where do things go from here? Exactly how the US will respond to the events of September 11th remain unclear but we know that this will be a long and drawn out process. To its credit it refrained from an immediate retaliatory strike but the declaration of 'War on Terrorism' has placed President Bush in the middle of a complex maze. The forming of the coalition supporting this noble aim is an amazing achievement and, perhaps unique, but will the US act with justice? Even if the terrorists in Afghanistan are brought to justice, will the US simply step away once the Northern Alliance has recaptured Kabul? This in itself would appear to be replete with danger, as the country would be left with a ruling alliance that had only held together to remove their common enemy – the Taleban. This would surely sow the seeds for future conflict in the country for years to come.

And what will happen when the focus shifts away from Afghanistan (and the staggering problem of nearly eight million Afghan refugees at risk of imminent starvation)? Which country will be next – Iraq? Iran? The US? Israel? Palestine? How well will this coalition hold and what will be done to resolve the problems in the Middle East – identified by many as one of the causes of terrorism? This debate has already begun. In Britain Liberal Democrat Foreign Affairs spokesman Menzies Campbell accused America of failing to implement UN resolutions that guarantee a homeland for the Palestinians. Clare Short, Britain's Secretary for International Development also highlighted the terrible suffering of the Iraqi people hit by UN sanctions as well as the endless suffering of the Palestinians. Meanwhile, just two days after the New York disaster, Israel carried out its biggest attack of the year on Palestinians, and the Israeli Foreign Minister labelled Iran as *'...a country that supports terrorism.'* The difficulties facing the coalition are evident and whilst one hopes that this noble objective of eliminating terrorism does not go the same way of earlier saintly goals such as 'humanitarian intervention' in that they were evidently applied in unequal measures, the signs are not encouraging.

It is a time for deep analysis and reflection the world over and a time for countries to practice what they preach – that terrorism in any form has no place in our world today.

Fareed Ahmad – UK

Origin of Life – Different Theories and Propositions

by Hadhrat Mirza Tahir Ahmad

This is an extract taken from the book Revelation, Rationality, Knowledge and Truth *written by the author.*

For Aeons, philosophers have been attempting to solve the riddle of existence and origin of the universe. In the current era, their attention has been particularly focused on the origin of life. The dilemma they face is the question of who preceded whom – was it the chicken which laid the egg, or the egg which hatched the chicken? The most difficult challenge they face is about the creation of organic material. Organic material is a product of life and life itself is a product of organic material. How did inorganic chemicals convert into organic chemicals before the creation of life?

The problem which confronted researchers was evidently of a paradoxical nature. Every problem solved gave birth to many others perhaps more difficult to resolve. Every question that was answered led to a chain of other unanswerable questions, or, so it seemed. As the research proceeded, with a growing number of participating scientists, sometimes it appeared as if some of the researchers had at last struck bonanza. Such discoveries created great excitement among some who were inclined to make tall claims at every breakthrough that favoured their conception of how things might have been. There were others however, who were far more cautious and kept warning their fellow scientists not to be overzealous in drawing conclusions. The search for such clues as could scientifically satisfy their inquiry was set in motion in every direction. To date, none of the proposed solutions have found unanimous acceptance in the scientific community. Different scientists have reacted differently to different theories. Some have rejected them entirely, propounding their own propositions instead, while some have accepted them but only partially. Yet as a whole, the general direction of the overall research has begun to emerge, becoming clearer with the passage of

time. Evidence is being discovered which lends new support to some of the propositions which are finding greater favour among the scientific community.

The purpose of this exercise is not to bother the reader with overmuch scientific jargon but some of it is unavoidable, otherwise we shall fail to achieve the object of co-relating the scientific data with the relevant Qur'anic verses. As much as the subject would allow, care is taken to simplify the language so that even the ordinary reader, unfamiliar with science, could keep up with us provided he makes a special effort to remain alert. A difficult task indeed, but not altogether impossible we hope!

This study will help the reader to realise that none of the Qur'anic declarations relating to the origin of life and its consequent evolution have ever been proved wrong. On the contrary, the general trend of the research continues to support the scenario of the creation of life as presented by them. We believe this will lead the reader to a world of wonders, far more intriguing than the story of Alice in Wonderland. The wonders of Alice's dreamland were fictional after all, but the journey we propose to undertake into our ancient past is on the wings of Divine revelation supported by scientific evidence. This is no fiction. It is a real land of wonders and mysteries of the creation of God, the Unique, the Peerless.

Origin of Life Theories

Let us visualise with the help of scientific investigation, the image of the environment and the atmosphere around the earth as it existed for three and a half billion years before the origin of life. The atmosphere at that time is believed to be anoxic – lacking free unlocked oxygen. No form of life which depends on metabolism for the release of energy through oxidation could have survived in such an atmosphere. In fact the absence of oxygen was an essential prerequisite for the synthesis of organic material from inorganic chemicals. Hence by design, as we believe, or by accident as the secular scientist will have it, it so happened that during the first three and a half billion years of the age of the earth, the atmosphere remained oxygen-free. There was no protective ozone layer in the stratosphere either. The chemical

materials which must have been the precursors to stable forms of organic chemicals had to evolve without oxygen:

> 'J.B.S. Haldane, the British biochemist, seems to have been the first to appreciate that a reducing atmosphere one with no free oxygen, was a requirement for the evolution of life from nonliving organic matter.'[1]

The absence of an ozone layer must have facilitated the high energy radiation blasts from the cosmos to reach the earth and ocean surfaces uninterrupted. The bombardment of this intense cosmic energy became largely instrumental in the creation of pre-biotic organisms which helped the transfer of material from inorganic to organic. The synthesis from inorganic chemicals in the oceans into preliminary organic chemicals such as amino acids was initially triggered off by the cosmic radiation in an anoxic atmosphere. This chemical reaction started from simple inorganic molecules such as water, carbon dioxide and ammonia. As this process advanced, according to Haldane, the primitive oceans reached the consistency of a hot, dilute soup (primordial soup).[2]

The outcome of Haldane's research was published in 1929 in the *Rationalist Annual* but no serious note was taken of it in scientific circles. A few years before Haldane, A.I. Oparin, a Soviet scientist, had also published a small monograph in Russia in 1924, proposing similar ideas concerning the origin of life. This article too was met with no better fate. Both had simultaneously and independently worked on the problem of how organic material could have been synthesized from inorganic material before the beginning of biotic evolution.

A New Landmark

After Oparin and Haldane, other scientists rose to fame by taking up the same inquiry all over again. During this period, it was undoubtedly Harold C. Urey of the American University of Chicago, who made the greatest theoretical contribution in this field. He restated the OparinHaldane thesis in his book *The Planets*[3] and resurrected the interest of the scientists in their pioneer research concerning the issue of the origin of life. In practical

research however, it was Stanley L. Miller, a pupil of Urey. who stole the limelight in 1953. He, in accordance with Urey's theory recreated the atmospheric semblance of the primitive earth in a sealed glass apparatus. He filled it with a few litres of methane, ammonia and hydrogen gases, representing the atmosphere which scientists thought had then existed. To this mixture he added some water. A spark discharge device simulated lightning while a heated coil kept the water bubbling. Within a few days a reddish precipitate began to stain the glass which on analysis, to the utter delight of Miller, was found rich in amino acids[4]. It is amino acids, one should remember, which link up together to form proteins, the building material from which the bricks of life are made.

At that time, the outcome of this experiment was considered the most stunning evidence that the prerequisite organic material for building the bricks of life could originate from natural atmospheric interaction with sea water, producing the 'primordial soup'. Soon, scientific fiction began to take root in this discovery. Many a scientist, in a highly excited state of mind, began to predict that it would not be long before life itself could be conjured up in test tubes. Many years later, however, Miller himself had quite a different gloomy confession to make:

> 'The problem of the origin of life has turned out to be much more difficult than 1, and most other people, envisioned.'[5]

His epoch-making experiment was performed in 1953 when he was a mere twenty-three year old undergraduate at the University of Chicago. Coincidentally, it was in the same year that another highly important research was successfully carried out, which was profoundly linked with the same issue. It related to the deciphering for the first time, by Watson and Crick, of the structure of deoxyribonucleic acid (DNA). DNA together with RNA, constitute the fundamental bricks of life. This led to a much bigger challenge of envisioning how life could have resulted from some primitive forms of organic material, accidentally created as scientists believed, into such profoundly complex material.

The problems were manifold. Of the many questions raised, one was how and by what game of chance, inorganic material could convert into the preliminary organic material which is a prerequisite for building the bricks of life. Returning to the early experiments of Urey, the first samples of laboratory test tube experiments were critically re-examined by many scientists. Some of them discovered grave flaws in Miller's experiment, taking some lustre off the hitherto much glorified exercise.

One major objection levelled at his experiment was that it was carried out in a simple flask and test-tube apparatus. The water substituting sea water was kept at boiling temperature while the natural conditions could not have admitted to such a proposition. This should have required the constantly controlled boiling of sea water over billions of years.

Some scientists would much rather have a cold start for the synthesis of life than the wet start proposed by Miller. They were inclined towards favouring the synthesis of organic material based on solid state chemistry rather than on the boiling water scenario.

Some went even further to suggest that the preliminary organic chemicals need not have been created here on earth. To support this view, they referred to the study of meteoritic rocks some of which are known to have contained many amino acids. In fact, the controlled experiment of Miller could produce only thirty-five amino acids as against the fifty-two counted during the analytical study of material from space. But those in favour of a ‘wet start’, originating in the sea water, raised many counterobjections against this proposition. One such objection relates to the well-known phenomenon of atmospheric friction which must have generated an immense amount of heat as the meteorites entered the earth's atmosphere. Such friction can raise the temperature of the intruding rocks so high as to set them ablaze. Hence all organic material carried by the burning rock should have disintegrated in mid-air before reaching the earth. The evidence of amino acids found in meteoric rock, according to the critics, could have indicated only the contamination it must have received after reaching the earth and cooling down. Those who insisted that it is possible for the organic material to have

reached the earth safely from space, without confronting frictional heat, proposed another mode of transport which would be free from this flaw. It was suggested that the organic material might have been carried by small particles enwrapped in protective layers of icy covers such as found in the tails of comets. They could have softly alighted upon the earth like dew.

Returning once again to the epoch-making experiment performed by Miller, and the storm it raised, it did not take very long for its dust to settle down. In the calm that ensued, many a cool-minded reappraisal was conducted by some scientists.

One most eminent scholar R.E. Dickerson, in his excellent article *Chemical Evolution and the Origin of Life*, has critically examined at length the inferences drawn from Millers' experiment, in a detached, unbiased study. One thing that emerges predominantly from his review is that all the facts and experimental data relating to the Miller experiment were not included in the early reports.

Dickerson deemed it essential to point out:

> 'Although the simulations yield many of the amino acids found in the proteins of living organisms, they also yield at least as many related molecules that are not present.'[6]

Experiments, simulating Miller's pioneer work, carried out by other scientists, revealed that out of three isomeric forms of an amino acid produced during these experiments 'only valine appears in proteins today'. None of the seven amino acid isomers, created during sparkdischarge experiments has been 'designated as a protein constituent' by the universal code of life on earth. He further observes:

> '...why the present set of 20 amino acids was chosen. Were there false starts, with genetic codes that specified different sets of amino acids, in lines of development that died out without a trace because they could not compete with the lines that survived?'[6]

The task of creating the most highly complex and precisely sequenced proteins, the essential material for building the bricks of life – DNA/RNA, out of the simple amino acids synthesized by Miller is a 'mission impossible'. Even if conceded that due to the interplay of limitless chances the molecules of DNA/RNA were finally synthesized, the dilemma remains far from being resolved.

Dickerson quotes the British scientist, J.D. Bernal to emphasize the problem at hand, by suggesting that the scenario of a single molecule of DNA, created by chance,

> '.....generating the rest of life was put forward with slightly less plausibility than that of Adain and Eve in the Garden.'[7]

Dickerson, during his summarisation of the attendant problem highlights the difficulties inherent in the proposed solutions and suggests that the theorists actually rely on a wild, fantastic game of chance. But to that we shall return later.

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The Path to Success

Hadhrat Mirza Ghulam Ahmad(as)
(The Promised Messiah and Mahdi)

Presented below is a compilation of extracts' which have been taken from the speeches and discourses of **Hadhrat Mirza Ghulam Ahmad** of Qadian, the Promised Messiah(as) and Mahdi, as recorded in the collection entitled *Malfoozat.*

Compiled and translated by Amatul Hadi Ahmad

(Translator's note: All references to the verses of the Holy Qur'an are given in Arabic as they occur in the text. The English translation, presented in italics, is taken from the translation of the Holy Qur'an by Hadhrat Maulvi Sher Ali Sahib(ra). Where the Promised Messiah(as) has himself stated a certain interpretation of the Arabic verse, this is incorporated in the main body of the text).

People desire progress, but they do not appreciate how progress is achieved. Worldly people assume that progress is achieved by emulating Europe, but I say that progress is achieved always through truthfulness. God has put before us a model of such achievement, namely, the example of the Holy Prophet(sa) and his companions. There will be progress now in exactly the same manner as progress was achieved before and it is a perfectly true statement to say that the progress achieved earlier (at the time of the Holy Prophet(sa) and his companions) was achieved through truthfulness. They put themselves under the yoke of winning God's pleasure and

brought themselves under the code of obedience to God Almighty. Any progress achieved now will have to follow exactly the same pattern.

Sayyed Ahmad Khan (a scholarly leader) always repeated the nationalistic slogan. However, one is sorry to note that he could not bring about the reform even of his own son. This makes it clear that to make a claim is one thing and to prove the truth of that claim is quite another. The fact of the matter is exactly that which has been taught by the Holy Qur'an. Until such time as Muslims fully practice the teachings of the Holy Qur'an they cannot achieve any kind of progress. They move away from the Holy Qur'an, so by the same token, they are removed from the paths of progress. It is practice of the [teachings of] the Holy Qur'an that is the source of progress and guidance. God has not forbidden trade, farming and other legitimate pursuits of livelihood. Such things should not, however, be turned into ultimate aims. On the contrary, they should be considered as an aid in the service of one's faith. One of the purposes of *Zakat*, for instance, is that a portion of wealth should be used in the service of religion.

Remember this well that the real means of achieving progress is to be aware that until a nation takes some steps for the sake of God, until its people (take measures to) purify their hearts, its progress is not possible. It is a misguided idea that it is only by learning to read English, by cladding oneself in English dress and by indulging in alcohol and other immoral acts of behaviour that any advancement can be made. On the contrary, this is the road to destruction. Did the people of Prophet Noah's(as) time not have a standard of living that allowed much comfort and indulgence? Similarly, at the time of Prophet Lot(as) people generally enjoyed a comfortable lifestyle. In our own time, there exist many means of earning a livelihood among which is the profession that uses language (as its main tool of trade). However, the language that is the language of God has been made the key to all knowledge and profound understanding. When a people leave aside all prejudice and carefully consider the word of the Holy Qur'an and engage in prayer rather than indulging in shallow objections, there will then be progress.

People who shout the slogans of 'national progress' amaze me and I wonder if they have forgotten that one day they have to meet their end – yet they give precedence to a life that is transient. They wish that they too should become wealthy and great like Europe. I do not stop them from making some efforts to a degree [in that regard], but excess is contemptible. It is an unfortunate state of affairs that the people who want progress consider every type of immoral act to be legitimate, even acts such as adultery, as the European way of life is showing. If this is progress, what then is destruction? You should, therefore, purify your intentions and try to please God. Engage constantly in prayer and pray for the spread of the message of your religion. After that, it is not forbidden to make use of the God given capabilities in the pursuit of one's livelihood, be it farming, employment or trade. Do not, however, put all your heart into your profession or your trade by turning it into something to be pursued for its own sake. On the contrary, you should try to distance your heart from it, considering it to be a trial and keep praying to God Almighty that He may bring upon you a time when you may have freedom [from such worldly pursuits] for the remembrance of God. This is my purpose and this is my teaching. If someone wishes to oppose it or make fun of it, it is up to him. This is the truth [regardless of what people's reactions may be].

Those who consider themselves to be 'free-thinkers' deride these ideas and consider those who propose such views as immature people who are trying to take them back 1300 years. However, those who are of a righteous nature and who remember death, can decide for themselves as to which of the two is on the path of truth.

Moreover, I see that these people [of modern day thinking] say what they say only so far as they enjoy good health. As soon as they go through some trial or suffering, they soon come to their senses. The 'Naturalist', for instance, displays strength of belief in relation to the level of worldly and material comforts enjoyed by him. His belief weakens as soon as he is faced with some trial. He who holds a high position, enjoys worldly greatness and sees his honour as being something worldly to be granted by the people, how can such a one

understand what religion is?
[*Malfoozat Vol. 8, pp.29-31*]

It is commonly accepted that a person who has no relevant knowledge on a subject has no right to give an opinion. To give one's opinion on a subject, it is essential that one possess relevant knowledge. If a person who is ignorant of a particular subject, starts to give his opinion, would he not be considered foolish? Of course he would be. Moreover, other more intelligent people would put him to shame by pointing out his ignorance of the subject. The same is the case of those who state that God does not exist. What right have they to give such an opinion when they have no knowledge about this matter and they have never made any effort in search of God.

The people who have the right to an opinion in this matter are those who might have set upon a path in search of God but who [for the sake of argument] may have been unsuccessful in finding Him. It is such people who would have the right to say that there is no God. However, when a person has not undertaken a search and has not made any effort to seek God, he has no right to deny God's existence. God does exist and He is a being such that the more one believes in Him, the greater is the power that is granted to the believer. God's being is hidden and deeply concealed, yet it gradually manifests itself to the believer who strives in God's path and he is eventually able to 'see' God clearly. The power of faith is such that it increases by the day. This is the one thing that should be sought by the world. The world, however, has become largely bereft of such powers.

Islam was the religion that had come [to grant] such powers of faith but it is now itself in a weak position and the Muslims generally feel that they are weak. If this is not the case, then what is the reason for all the meetings and conferences that take place daily and for the new groups that are formed who claim to be working to assist and support Islam. It is with much regret that I note that in these meetings slogans are raised for 'our nation' and calls are made for 'national progress' but the question is that previously when 'the nation' was formed, was it formed by following Europe? Was progress in the past achieved by following in the footsteps of the Western nations?

If it can be proven that the previous period of progress and success [in the world of Islam] was achieved in this way, then it would, indeed be a sin not to follow in the footsteps of Europe. However, should it be the case that it is not proven, and it will never be proven to be so, then it is an extreme injustice to abandon the principles of Islam and to abandon the Qur'an.

It was the Holy Qur'an that transformed the unruly people [of Arabia] by turning them, first, into human beings and then turned those human beings into godly human beings. Do they propose to abandon all this in order to follow a nation that worships the material world? Those who wish to see improvement in the condition of Islam while desiring a life that faces towards the West, can never succeed. Only those will succeed who follow the Holy Qur'an.

Success without the Qur'an is an impossible and difficult task and the thought of achieving such success is just wishful thinking. One should keep before one the example of the Companions of the Holy Prophet(sa) and see how they followed the Holy Prophet(sa) and how they kept their religion paramount, above all else. Consequently, all the promises that God had made to them were fulfilled. In the beginning opponents mocked and taunted them that they were not even able to walk about in the land freely, yet they claim they will one day become its rulers. They, however, lost themselves in obedience to the Holy Prophet(sa) and they attained that which for centuries had not been theirs. They loved the Holy Qur'an and the Holy Prophet(sa) and they would strive day and night in obedience to both. They did not follow those whom they called 'non-believers', not even in customary traditions. As long as Islam remained in this state, it enjoyed a period of great progress and glorious success and its secret is [contained in this Persian verse]:

When one has God
What need is there for worry

The key to the victories and successes of Muslims was the strength of their faith. Large numbers confronted Salahuddin, yet no one could gain victory over him and his motive was to serve Islam. This situation [in Islam] persisted for a long period. God's wrath began to fall upon them when Kings began

to indulge in corrupt practices and gradually there was a steep decline, the final outcome of which can now be observed all around us. However, I disagree with the diagnosis that is being proposed of the 'ailment' [by the self-professed supporters of Islam]. In my view the cure recommended for such a diagnosis would prove harmful and dangerous. Until the Muslims turn to the Holy Qur'an and until there develops in them belief and faith, their situation will not improve. Respect and an upturn in their fortunes will come from the same direction as was the case before.

It is not my purpose to encourage the Muslims to become sluggish. Islam does not wish to make any one sluggish. You should, by all means, engage in your employment and enterprise, be it business or trade, but I do not like the fact that there should be no time left for God. You should engage in your trade when it is time for that but even then you should have the fear and awe of God before you so that your trade, too, can become like worship. You should not abandon *Salat* when it is time to offer *Salat*. Whatever is your business, you should give religion priority over all worldly matters. The world should not become the object of all your desires. The real objective should be your religion then the worldly matters will also become matters of religion. This is beautifully illustrated by the Companions of the Holy Prophet(sa) who did not forget God even during the most difficult times.

The time of battle and the sword is so dangerous that even just the thought of it is very disturbing. It is a time when emotions are aroused [and one can easily forget all else] but the Companions of the Holy Prophet(sa) did not forget God even at times such as these. They did not abandon their *Salat* and always turned to prayer. The unfortunate thing these days is that the Muslims, in their efforts to assist the advancement of the Muslims tend to neglect God. They hold conferences, they make long speeches and put in much effort to bring about a change in the situation of the Muslims but they are so negligent towards God that they do not even give Him a thought. In such a state of affairs, when all their efforts are for the world, what hope is there that their wishes would bear fruit!

Remember that until [the meaning

of the words] *La ilaha illallah* [i.e. there is no God but Allah] penetrates into the heart and mind and until the light of Islam reaches into every particle of one's being and rules over it, there can never be any progress.

Should you present the example of the Western nations having achieved progress then remember that theirs is a different case. You have been given the Book [the Holy Qur'an], and a conclusive argument is before you. For others it is a separate matter and for them there is a different time for reckoning. However, if you, [the Muslims] abandon the Book of God, then for you there is hell in this very world.

Given the present state of Islam, groups are formed and conferences are held in nearly every town to make the condition of the Muslims better but no sympathiser of Islam ever utters the words that the Qur'an should be made the Guide and the basis of our practice. If they say anything at all it is that people should learn English, colleges should be set up and people should aim to adopt professions such as that of a barrister or a lawyer. This shows that there remains no faith in God. It is the case that even the very skillful physicians end their treatment should it not produce positive effects within ten days. Here, there is failure after failure and yet there is no turning away from the proposed 'remedy'. If it was in fact the case that there was no God, then by all means progress could be achieved by abandoning Him. However, when there is a God, and there necessarily is a God, then we can never achieve progress by abandoning Him. Having shown disrespect to God and to God's Book, people still wish that they should be successful and their nation should be formed – but it can never be so.

In my view it is quite evident that there is only one path of progress and that is to know God and to have a living belief in Him. However, if such ideas were to be mentioned in a worldly gathering, people would mock at them but I feel pity for them that they are unable to see what I can see!

[*Malfoozat, Vol. 2, pp.155-158.*

Islam – Cleanliness and Health of the Body and Soul

By Dr. A.S.K Ghauri – UK

The following is from a speech given by Dr. Saboor Ghauri on the occasion of a Hartlepool Jama'at monthly meeting on 8th July 2001.

Islam literally means 'Peace' and it is the achievement of peace that represents the ultimate goal for all followers of Islam or Muslims. Islam is the only religion that provides a complete and clear guidance on how to achieve peace and harmony in our lives and this is laid down in the unchanged Arabic text of the Holy Qur'an.

Amazingly, over the past 1400 years, scientific discoveries have actually made the Holy Qur'an easier to understand rather than providing contradictions. The Christian churches in the Renaissance period struggled with the concept that the earth was so small and such an insignificant part of the entire universe – while Islam and the Holy Qur'an had made this clear 1000 years before. There is no case in Islamic history where science has not enhanced the teachings in the Holy Qur'an. We should really all be able to look at our own professions and seek guidance from Islam for achieving peace and harmony within our daily routine.

In my profession as a doctor I have studied how all the tissues and organs of the body work in a perfectly controlled harmony to achieve an inner sense of well-being. This hype of inner peace or health again comes under the basic goal of Islam, that is the achievement of peace…not social, economic and political in this case, but physical peace.

As a doctor, I have also unfortunately witnessed much pain, suffering and death on a regular basis. Suffering is a necessary part of life on Earth. Without its presence there would be no motive force pushing man towards spiritual and scientific improvements which also lead man closer to God. However, so much of the suffering I see in the hospital seems so self-inflicted and the question arises, 'Is there any guidance in the Holy Qur'an which would improve our health or physical peace in the light of modern scientific understanding?'

I propose to elaborate on the philosophy

of a few Islamic teachings regarding health matters with special reference to the eating of pork, the drinking of alcohol, dietary habits and cleanliness. Modern science, ultimately, always justifies Islamic direction or restriction, either immediately or with the passage of time to allow man to achieve greater scientific development and understanding, even when the principle seems initially to be merely restrictive and without basis.

The Holy Qur'an says:

> *Forbidden to you is the flesh of an animal which dies of itself, the blood and the flesh of swine, and that on which is invoked the name of one other than Allah …whoso is forced by hunger, without being wilfully inclined to sin, then, surely, Allah is Most Forgiving, Merciful.*
> (Ch.5: v.4)

Interestingly, the Bible says:

> And the swine, because it divideth the hoof, yet cheweth the cud – it is unclean to you; Ye shall not eat of their flesh or not touch the dead carcass.
> *(Leviticus 11:7)*

Islamic philosophy proposes that eating food has two effects. The first affect is on the body, and the second affect is on the soul. Therefore, if you eat a foul animal there will be foul affects on the body and the soul.

Affects on the body from eating pork include the passage of viruses such as 'swine influenza virus' which may cause a 'flu-like' illness, the passage of parasites, such as the adult tapeworm, which can lodge in the gastrointestinal tract of the human and cause malnutrition and blood loss. Pork also has an extremely high proportion of fat content – we know that the high intake of fat predisposes to high blood pressure and the gradual blocking of arteries with fatty material leading to heart attacks and strokes.

Effects of pork on the soul, according to Islamic philosophy, would affect moral qualities such as chastity, modesty, humility, honesty and integrity. Many people believe 'what you eat is what you are' and justify themselves by highlighting the different personality traits exhibited by meat eaters and vegetarians. Meat eaters are often described as being aggressive and competitive, while vegetarians are gentler and weaker. Many psychiatric symptoms such as apathy, depression, irritability and moodiness have been linked with dietary vitamin deficiencies and excesses. Essentially, what we are beginning to understand is what Islam has taught us from the outset what we eat has a greater affect on us than merely providing mechanical building

blocks for the growth of our physical body – our spiritual body/soul and personality are affected.

As Islam is a complete religion – no absolute ban has been declared. The Holy Qur'an says:

> *But whoso is forced by hunger…. God is Most Forgiving, Merciful.* (Ch.5:v.4)

This means that occasional benefit may be derived above and beyond the need to prevent death and starvation. One example is the use of pork insulin to treat diabetics … and this has been the mainstay of treatment for the past 20 years, but is now gradually being replaced by human insulin. The pig heart valve is still commonly transplanted to human hearts where the heart valves have weakened and narrowed. So we see that Islam is not as rigid or fixed as people may think about these matters.

The Holy Qur'an also mentions 'that which dies of itself' (Ch.5:v.4) should not be eaten. This essentially means that we should not eat animals that have died of disease or natural causes. Recently, in this country we have seen the crushed carcasses, including the spinal cords, of animals being fed on a wide scale to cows causing some to become mad or develop BSE (also known as mad cow disease) – unfortunately this has a risk of being passed on to humans often with severe or fatal consequences … and all because dead and diseased animals were crushed and included in the feed or offal of other animals.

Continuing with a dietary theme; the Holy Prophet(sa) said; 'when a person eats sparingly he fills his inside with light.'Also he described many physical benefits of fasting. We all now fully understand, in this day and age, that overeating is unhealthy…. it is so clearly unhealthy that I will not waste your time in listing the diseases related to overeating, ranging from diseases of the arteries to psychological and emotional disorders related to weight.

Briefly, I will turn to cleanliness and the prevention of disease. Islam requires us to perform formal ablutions including our hands, head and feet before prayers, five times a day with running water. There is good evidence that this prevents a wide range of diseases including gum disease, skin infections and foot problems. In the past year, many hospitals have been criticised for not providing simple hand washing facilities which is thought may reduce the chance of hospital infections by more than 60%. In these great, big high-tech. modern hospitals we seem to be simply re-inventing the wheel and finding that washing with water reduces the spread of disease!

I would like to mention psychiatric illnesses. In Islam the role of family values and careful upbringing of children is emphasised. The Holy Prophet(sa) said: 'No father can bestow on his child a gift more precious than a good upbringing.' It is recognised nowadays that many mental health problems and bizarre personality traits extend back from a difficult, abused or neglected childhood. Their deficiencies in upbringing implant in the recesses of the child's mind and feed the basis of abnormal behaviours in adulthood. This forms the basis of modern psychotherapy – for all its worth.

With regard to alcohol, the Holy Qur'an says:

> *They ask thee concerning wine and the games of chance. 'Say, in both these there is great sin and also some advantages for men; but their sin and harm is greater than their advantage'.* (Ch.2:v.220)

One in five males admitted to medical wards in hospitals in England have an alcohol related disease. Fifty percent of head injuries seen in 'Accident and Emergency' are alcohol related. Alcohol manages to cause physical problems, social problems and psychological problems. I have seen patients with severe shakes, hallucinations, sweats and fits because of alcohol withdrawal – I have seen other patients with severe depression and yet others undergoing family counselling to keep their marriages together, often because of alcohol related physical abuse by their partner…. And these are just psychological aspects of alcohol disease.

Turning to physical problems, I have seen many patients admitted to surgical wards with major gastrointestinal bleeding – vomiting blood from the mouth and passing blood in their motions – disease purely related to alcohol damage. The brain, liver and pancreas are other commonly damaged organs.

Islam recognises and allows that alcohol may have some benefits – and we see many homeopathic and allopathic medicines use dilute alcohol as a solvent, but on the whole its use is discouraged. Islam promotes social peace – but in alcohol, people find a small and temporary escape from reality and escape from social responsibility. If one cannot talk or eat without the assistance of alcohol, then society will soon break down. Crime figures will rise – even now most crimes are alcohol related. A famous Chinese proverb aptly quoted: 'first the man takes the drink, then the drink takes a drink, then the drink takes the man'.

The Holy Prophet(sa) said, 'there is no disease for which God has not created a cure'. In this day and age we all appreciate that many drugs and medicines originate from herbs and plants…for instance, the widely used antibiotic penicillin comes from a mould-like fungus called Penicillium that grows on decaying fruit and bread; and the heart stimulating drug digoxin originates from the extract of dried leaves of the foxglove plant.

In attaining physical peace and health, Islam has provided a great deal of assistance, some of which we have become aware of, some of which we are becoming aware of, and some of which we will become aware of. I hope I have provided some reasons for Islamic restrictions within the knowledge we have so far with regard to health matters – but I would like to finish by emphasising what the Promised Messiah, Hadhrat Mirza Ghulam Ahmad(as) used to repeat – that man is limited in all things, including knowledge and cannot satisfy all his needs using the material means provided – he needs to supplement his efforts with prayer.

I will relate one incident involving the Promised Messiah(sa): In 1907, a young boy called Abdul Karim was sent to Qadian from his home in Hyderabad, about 1000 miles away, to pursue his religious studies. In Qadian, a mad dog suffering from rabies bit him and he was immediately rushed to the Pasteur Institute at Kasauli for treatment. He returned after a few days but began to show the unmistakable signs of rabies – that is fever, itching, spasms and frothing at the mouth with an intense fear of water. The Pasteur Institute was contacted again but the director returned a telegram saying: 'Regret – nothing can be done for Abdul Karim'. Even nowadays, rabies is considered fatal once the symptoms have actually begun. When the Promised Messiah(as) was informed that nothing more could be done, he was deeply moved and prayed earnestly to God to cure the young man. After 24 hours, Abdul Karim began to show signs of improvement and in a short time he recovered to full health.

The telegram from the Pasteur Institute remains in the Jama'at archives as a reminder that the power of prayer should never be overlooked if we ever misguidedly begin to believe we have knowledge and control over all illness and death.

My Faith

(Ths is a shortened version of a speech presented to the 2001 USAAnnual Convention of Ahmadiyyat at Maryland).

By Aliya A Latif – USA

Faith is unyielding conviction. It is the absence of fear and doubts. In its purest form there is no deterrence or persuasion that can corrupt it. In effect, Faith is belief.

The successful student cannot be deterred. When an exam is looming, suddenly social functions lose their appeal. She is willing to forgo sleep, food, and relationships to achieve the desired result.

What keeps the student so focused? No one has promised her success. But she visualizes her future, and with that vision comes the deep seeded desire to attain it. She has faith in what the future will give and knowledge of what her purpose as student is. And with this desire and the attributes of hard work and perseverance, worldly pursuits lose their appeal and challenges in her path do not spell defeat.

Just like this dedicated student, Believers must strive towards excellence and have a clear understanding of the purpose of their life. With this understanding AND the required action, they can attain true success.

However, unlike the student, we have a guarantee and a promise from our Lord. For believers, there won't be the unlucky twist of fate that finds the student in a recession or a poor job market. Instead, Allah promises us paradise in this world and the next that is far greater and more lasting than our humble imaginations can conceive.

In Surah Al-Dhariyat Verse 57-59, Allah says:

> *And I have not created the Jinn and the men but that they may worship Me. I desire no sustenance from them nor do I desire that they should feed Me. Surely, it is Allah Himself who is the Great Sustainer, the Powerful, The Strong.*

These verses explain exactly why we must give precedence to our faith above any and everything else. Who else is as deserving? At one time or another every creature is in need of

help. Only God requires nothing from us, while we simultaneously require everything from him.

As Muslims we constantly affirm the oneness of God, and know that the most heinous of sins is to associate any other power with the likeness of Him. However, idolatry takes the deceptive form of many different evils. Today the threat does not lie in the idols of wood and clay that one time filled the sacred precincts of the Ka'aba. Instead, idols of the heart work to take believers away from the remembrance of Allah, and cast them into the clutches of worldly desires and passions.

These idols are far more dangerous then those physical ones of the past because these are the idols that, without constant self-evaluation and prayer, can creep into the heart and mind of a person almost instantly. These hurdles that hinder our achieving the objective set forth by Islam and Ahmadiyyat such as pride, greed, power and prestige can be overcome.

What is required is a burning desire to be near Allah, a desire so strong, that in comparison, the world appears a mere diversion. If this desire does not exist in our hearts presently, there are ways to foster and strengthen the inclination to be counted among the believers.

Allah has given us Salat, Fasting, the ability to Sacrifice, Zikre Ilahee (Remembrance of Allah), and a multitude of divine writings and human examples to fortify us. In our quest to strengthen our faith, there are worldly challenges that continually present themselves. These are the pursuits that take us away from emulating Allah's divine attributes and winning His pleasure, and can be found in all spheres of our lives.

The Encounter in the School

The obstacles lying in wait in our schools are too many to mention. While education is noble and learning, promoted, we must not forget the reality of our lives. There is no guarantee that we will all see old age. Adequate time must be given to secular studies but limitless success is found serving God and studying his divinely inspired works. The Promised Messiah(as) said,

> 'Who told our brethren that life is long? There is no season for death. It may overtake you at any time, so we must value whatever time we have. We will not have these times again'.
> (*A Life Supreme*, p.103).

Despite acknowledging the stresses and struggles of academic life, still we must fast, pray, and read for the betterment of our souls. The Holy Qur'an (Ch.3:v.103) states,

> *…O ye who believe! Fear Allah as He should be feared; and let not death overtake you except when you are in a state of submission."*

Let all students vow to not only give precedence, but DESIRE to show preference to Faith. In the end, it is the grace of God alone that allows for success both academic and spiritual.

The Encounter in the Workplace

No one would continually arrive late to their job, or neglect important assignments and projects. They would not because they fear their livelihood and physical well being depends on it.

However, when we continually choose worldly endeavors of the workplace over our faith, we are willing to risk a spiritual death, in hopes of an unpromised, secure physical life. Now, more than ever, individuals must trust in the All Encompassing Power of God.

The reality is that the most secure and accomplished person can lose everything. By some simple twist of fate all they've worked for, all they' have saved can be gone. The only protection is to maintain a level of detachment from the world; realizing gracious gifts are not permanent possessions and can be removed whenever God wills. The Promised Messiah(as), writes in *Our Teachings:*

> 'I do not forbid you to think of material means within proper limits: what I forbid is that like other nations you become wholly the slaves of material means, altogether forgetting God Who controls material means as well. Only if you had eyes to see, you would find there is only God and God alone, everything else being worthless. You can neither stretch out your arm nor fold it except with His permission. A person spiritually dead would laugh at this, but it would be better for him if he died before he indulged in this laughter.'

An excellent way to achieve this level of detachment is through financial sacrifice. We have inspiring examples of such sacrifice in the lives of the Holy Prophet(sa), Hadhrat Abu Bakr(ra), and Hadhrat Maulvi Nurriddin(ra) to name a few.

Similarly, our Lajna (ladies organisation) also has a long history of financial sacrifice. Lajna members were ready and willing to part with jewelry, money, and property to

support noble ventures such as the construction of Fazl Mosque in London and the Nusrat Jehan mosque in Denmark. And the opportunity is still available today to contribute to noble schemes.

The Encounter in the Home

The character of a believer is comparable to none. In sorrow and joy, trials and comfort, we are to remain peaceful, and humble, reserved and cheerful. In our homes, challenges that arise can be looked at as ways to develop self-control.

It is the absence of self-control that opens the floodgates for all types of evils and moral lapses by welcoming unrest, bitterness, and resentment, which destroy peace in both the home and the spirit.

Patience when dealing with the elderly, parents, spouses, siblings and especially young children are invaluable characteristics that can go a long way in preserving Taqwa (righteousness).

A wonderful lesson in patience can be found in the example of the Promised Messiah(sa) and his son Hadhrat Mirza Bashiruddin Mahmood Ahmad(ra).

It has been related that the Promised Messiah(as) used to be frequently interrupted by young children when deeply engrossed in writing his literary gems. Time and time again they would knock on the door of his room demanding that he open the door and let them in. The Promised Messiah(as) would quietly rise from his seat and without a word or expression of annoyance, open the door. On one occasion while he was engaged in writing a book, his young son, (second Khalifa) set fire to the completed manuscript papers, which the Promised Messiah(as) had placed to one side. On turning to them for reference he found them burnt to ashes. A smile spread across his face as he mused that perhaps God desired that he should write something better in it's place. (*A Life Supreme*, pp.45-46).

Encounter in the Jama'at

Even in our Jama'ats we find worldly challenges and obstacles to overcome. Hadhrat Ali is reported to have said, 'Your vices of which you are ashamed of are better than your virtues of which you are proud' (*A Life Supreme*, p.56). Prestigious degrees, wealth, children, and beauty are examples of God's grace and mercy. How can we be so proud of something we ultimately had no real control over creating? The Promised Messiah(as) warns:

> 'Take care that on the basis of a thing or two which you think you've accomplished, you do not fall into the delusion that you have

done all that is needed to be done. For God desires that your entire life, your whole being should undergo a deep and thorough revolution'.
(*Our Teachings*, pp.3-4).

We can humble ourselves by studying the life of the Prophet Muhammad(sa). He, without sin, spent his nights in deep devotion, served humanity, and risked his own life for the spread of Islam and peace. He prayed constantly for the fate of the world and Muslims, begging that God grant us mercy and understanding, as well as the desire to strive for His Sake.

He was not satisfied with the blessed advancements he had made during his life. And his last days still found him in heartfelt supplication to his Lord. We must humble ourselves, and strive to make our communities a place of learning, advancement, self-sufficiency and of course, Taqwa.

In Lajna, every Ahmadi woman is a member. We must not abandon it, be too proud to serve it, or too arrogant to remember that we are mirror to each other. Not alike physically, but spiritually we must be a reflection and recognise what's truly important – our modesty, our Taqwa (righteousness), our will to please Allah.

We must desire to see this Jama'at of Allah's own divine creation, succeed over any pettiness, pride, or complacency. We are a multitude of races, talents, and ideas that can change the world.

The Encounter Living in an Amoral Society

Living in an amoral society, there is no focus on God, therefore we must constantly remind ourselves. Reading our Qur'an, Hadith, religious works and writings of the Promised Messiah and Khalifahs will arm us against un-Islamic practices and beliefs, as well as helping us to present Ahmadiyyat to the world.

There is a constant pressure to assimilate and adopt the habits and practices that are foreign to the true teachings of Islam. If words of Islam and Ahmadiyyat never leave our lips we must analyze what is being said in their place. What is the image of Islam that we are responsible for portraying? Am I the Muslim who adds to the confusion or do I clarify misconceptions? The mistakes of an unaware person differ greatly from the acts of someone who has the truth and then chooses to disregard it.

The fundamental way to achieve closeness to Allah and ward off evil is through prayer. We are given a direct

means to contact God throughout the day, each day of the week. The importance of prayer can be seen throughout Islamic history and even presently in the example of the Ahmadis who were martyred this past fall.

Ahmadis living bravely in not just amoral, but life threatening situations, still hold firm to the rope of Allah, and not only pray in private but come together to make congregational prayers in the mosque. This is truly putting your faith above any punishment the world might offer.

In America, a life of comparative ease, we must give Salat precedence in our daily lives. This means we abide by correct prayer times, proper prayer etiquette, and acknowledge the importance of filling our mosques in congregational prayer.

Similarly, believers must be aware of where they place their trust. Seeking the advice and counsel of others over seeking Allah's help first, or relying on crutches such as alcohol, drugs and other means of escapism do not bring us closer to happiness in this world or the next. In the Holy Qur'an, Ch.3: v.161, it states:

> *If Allah helps you, none can overcome you; but if He forsake you, then who is there that can help you besides Him? In Allah, then, let the believers put their trust.*

Conclusions

The Believer enters new realms of paradise on earth as she continues to overcome worldly obstacles. Soon she reaches a level where hardships are regarded as *blessings* because they are opportunities to show her undying love and devotion to Allah. By accepting these trials patiently and courageously she will not only win the approval of God, but will grow in spiritual stature.

The fact that we live in an amoral society makes it at times difficult to live a righteous life, but as the 2nd Khalifa writes in his commentary of Surah Al-Zilzal, no action of man, good or bad is wasted. It must, and does, produce its result.

Therefore, struggling to do what's right has a definite reward in this world and in the next. By giving up the mad pursuit of worldly pleasures, you are never left empty handed. You acquire the love of God, while superficial desires appear low and basic. You are rewarded with equanimity of the mind, tranquility of the heart and contentment of the soul. And in terms of rewards, what could be more noble than peace?

Those who devote their time to the service of the Jamaat and their faith are rewarded beyond conception. He provides for their welfare, protection, and prosperity. He answers their prayers even before they supplicate.

The reality is that we are all on a continuous journey toward spiritual progress. And none are exempt. Some may seem stagnant at the moment while others rush ahead. But there is hope for everyone. Each new day Allah gives provides the opportunity to change and grow. In the Holy Qur'an Ch.39:v.54 we read:

> *O My servants who have committed excesses against their own souls! Despair not of the Mercy of Allah. Surely Allah forgives all sins. Verily He is Most Forgiving, Merciful.*

Seek forgiveness for past behavior and look ahead to future success. Let us desire to show our devotion to God first, for our time here is short. Feel the urgency to win Allah's pleasure by being the best mother, daughter, sister, neighbor, friend, and above all else, believer possible. And enjoining our Jamaat and surrounding community to follow suit.

We are here to provide proof through example that Islam is a living religion and the only solution. Let us refuse to fear the response others may have to our faith or our ideals. We are not here to please them. We are not here to cater to them.

Finally, in the words of the third Khalifah, Hadhrat Mirza Nasir Ahmad(ra) during his opening address in 1967, Rabwah, Pakistan;

May you continue the habit of humble supplications and may your souls be ever prostrate at the threshold of Allah, the Lord of the worlds, and may the seeking of His pleasure and the carrying out of His commandments always have priority over your worldly affairs.

You are the party of the Lord, which has been set up for the overall triumph of Islam. In carrying out this project to its successful conclusion you will have to endure a thousand hardships and persecutions and you will be exposed to every type of trial and tribulation.

I pray that you may stand every test successfully and that you may be bestowed steadfastness by your noble Lord at the time of every trial. Devote yourselves wholly to Him and may that Compassionate Master Cleanse and purify you and lift you up into His lap like dear children and open the gates of every bounty for you and make you the heirs of all good.

Islamic Perspective

Hadhrat Mirza TahirAhmad, the Fourth Head of the Ahmadiyya Movement in Islam, from time to time offers to people of all nationalities, faiths and beliefs the opportunity of raising questions and issues that are of interest to them. Presented below are answers to questions that were raised in a session held in Mannheim, Germany on 25 August 2001.

Compiled by Amatul Hadi Ahmad

Questioner:
Is Islam the only way to please God?

Hadhrat Mirza Tahir Ahmad: No, not according to the Holy Qur'an. According to many verses of the Holy Qur'an, Islam is not the only way to please God. The followers of all previous religions took a path towards pleasing God and they made efforts to please God, one after the other, until the time of Islam. The followers of Jesus Christ(as), for instance, made efforts to please God. It is wrong, therefore, to claim that only the followers of Islam can please God. All religions do this and this is the purpose of religion. However, according to Islam, at the advent of the Holy Prophet(sa) who was the last law-bearing Prophet on earth, prophecy began to take another shape. This was in the sense that whosoever believed in the Holy Prophet of Islam(sa) and acted according to his traditions, he would be closer to God –(that is, the path of Islam takes one closer to God) than (did the paths followed by) the previous people. This is the main difference between Islamic belief and non-Islamic belief.

Questioner:
Is there a difference between the soul of man and the soul of woman?

Hadhrat Mirza Tahir Ahmad:
According to the Holy Qur'an, there is no difference between the soul of man and the soul of woman and both can enter heaven (and be there) together. The soul has no gender – its constitution is non-sexual. The physical constitution of men and women is, of course, different, both externally and internally.

Questioner:
Is it not possible that God may be a female, a goddess?

Hadhrat Mirza Tahir Ahmad:
As far as the gender is concerned, I

have already stated that the soul has no gender and so Allah has no gender. He is one being and He is not divided between a female God and a male God.

Questioner:
How can you be so sure that Allah is the only God?

Hadhrat Mirza Tahir Ahmad:
I invite your attention to the realm of nature. In the whole universe, according to an argument given by the Holy Qur'an, there is to be found only one 'nature'. The laws of nature are in accordance with each other and they never clash. Had there been two Gods, there should have been two systems of natural laws which would have clashed with each other. The argument presented by the Holy Qur'an is this that if one looks at nature, that is the system of natural laws, one would be surprised to find that in the entire universe there is only one system of laws of nature in operation. Having observed this, even Einstein was compelled to state that the symmetry in nature was so perfect that there had to be a Creator. Every law of nature is in accordance with other laws and they never clash – hence the universe cannot be considered to be a chaotic thing that came into being automatically of its own accord. There has to be a Creator who has created the universe in accordance with natural laws created by Him and no one else.

Questioner:
Does the evil that exists in creation, in the world and in man, have an effect on Hazur? What are the possibilities for man to overcome these evils and thus acquire a more wholesome mind?

Hadhrat Mirza Tahir Ahmad:
According to Islam every child is born on the pattern of Allah's creation by which is meant that every child is born good and that no child is born bad. It is later on, in the child's life that its parents or the social environment in which it is being brought up, turn the child into a good person or a bad person. Fundamentally every child that is born is good. Evil intervenes later when the child grows older. It is either the evil of his parents that turns him to evil or the evil of his friends who are evil-minded or the evil of the environment that ultimately turns him into evil. Man should, therefore, be happy that he is born free of evil and that if he

happens to follow evil, he does so against his own conscience.

The proof that man is born with a wholesome soul lies in the conscience. Whenever one takes a false step, the first false step immediately reminds a person that he is doing wrong. Daily a person makes many decisions and he knows when he is making the wrong decision and he knows when he is taking the right decision. Hence the conscience is proof that Allah has created man fully aware of evil and good and in every case when he has to make a decision, his personal inner judgement decides in favour of good and not in favour of evil.

Questioner:
How did you come to know that you had been chosen by Allah as the Khalifa?

Hadhrat Mirza Tahir Ahmad:
[Within the Ahmadiyya Community] the system of election of a Caliph or a Khalifa is through an Electoral College. The fact is that as long as the Khalifa of the Ahmadiyya Community lives, the Electoral College, that has been previously constituted, becomes dormant and has nothing to do. The Electoral College has no authority to interfere with the work of the Khalifa or with the orders of the Khalifa. Every member of the Electoral College is under the Khalifa and they follow his orders. However, the moment a Khalifa dies the Electoral College comes to life and follows the set procedures for electing a new Khalifa. The same happened in my case. When the previous Khalifa died, the Electoral College assembled in the Mubarak Mosque in Rabwah and there they elected the new Khalifa. It so happened that of all the members of the Electoral College a very great majority were in my favour.

[During the process of election] it is not permitted to make speeches of high praises in proposing a person – all that is required is for a member of the Electoral College to stand up and put a name forward and for another to stand up and second that. This was the situation in my case also and after the votes were counted, the majority, a very large majority, went in my favour and hence I was elected the Khalifa.

It was not a question of my believing or thinking myself to be a Khalifa. There was no question of

my personal interest or my personal belief in my own greatness (God forbid). I am a very humble person of God but when I was elected, I took over the responsibility of the Khalifa, that is the Khalifa of the Ahmadiyya Community of the whole world.

[The interpreter here added that the questioner wants to know if Hazur thought about becoming a Caliph before the event?]

Hadhrat Mirza Tahir Ahmad:
No, never - I could never think such a thing. It would be extremely stupid to think that one should be a Caliph because it is a great burden – an unbelievably great burden – and only a fool could offer himself to be a Caliph.

Questioner:
Do you pray for people whom you do not know personally?

Hadhrat Mirza Tahir Ahmad:
Yes, of course I do. It is a regular feature of my prayer that I pray for people in different sections. First of all I pray for those whom I know and they are related to me. I, then, pray for those who are not related to me but I know them and they know me. Ultimately I pray for all the human beings who may be in any distress or difficulty with the result that my prayers cover all the people of the world and there is no selfish end in my prayers.

Questioner:
Why are there human beings?

Hadhrat Mirza Tahir Ahmad:
The answer is very simple. According to the Holy Qur'an, human beings are created to judge for themselves and decide between evil and good. Angels are created such that they only follow good and they have not been given a choice in this matter. For angels, therefore, there is no question of trial. They are created to believe and act only in accordance with Allah's will but human beings have been granted both possibilities – they have a choice between following evil and following good. That is why they are rewarded for goodness and punished for their bad acts. The purpose of creation of human beings is that they may discern between good and evil and be tried and tested through trials so that those who are steadfast and become good are duly rewarded and those who fail in their trials are put to punishment.

Lives of the Caliphs – Part II

This is the second part of an article first published in the Muslim Herald magazine in the November/ December 1974 issue. It covers the events of the lives of the Caliphs (Khulafa e Rashideen), the first four successors to the Holy Prophet Mohammad(sa).

by Dr Fareed Ahmad - UK

The third Caliph of Islam was the pious Uthman ibn Aflan(ra) who was elected by a select committee of Companions of the Prophet comprising Ali(ra), the Prophet's(sa) cousin, Zubair ibn al Awwam who had commanded the reinforcements sent into BabyIon, Saa'd ibn abi Waqqas the conqueror of Iraq, and Abdul Rahman ibn Auf one of the earliest converts.

The provinces all accepted Uthman's(ra) nomination readily because of his piety and affectionate manner. He was seventy years old when called to supreme power. Tradition relates that he had been the fourth male convert to Islam following Abu Bakr(ra), Ali(ra) and Zaid(ra).

Both he and Abu Bakr(ra) had been close friends and when the latter accepted Islam, he sent a messenger to Uthman(ra) telling him about the new faith. Uthman(ra) accepted without delay.

When Uthman(ra) became a convert, his uncle had abused him and tying him up with a rope had vowed that he would never release him until he had renounced Islam. But Uthman(ra) endured the persecution with fortitude and his uncle was finally forced to release him.

During the first persecution in Mecca, he had been among those who had emigrated to Abyssinia. When he returned to Mecca, he had then joined in the second flight to Medina.

He was of middle height and well-built and was more of a genial and lenient character than the rigid Umar(ra) had been.

Uthman(ra) was of the Bani Umaiya tribe of Quraish. which prior to the

rise of Islam had been among the most wealthiest clans. Himself a rich man, Uthman(ra) had spared all efforts to help the Prophet(sa) financially wherever possible.

When the Muslims were setting off to Tabuk in the time of the Prophet(sa), very little means of transport were available. It was then that Uthman(ra) came to the rescue by providing 960 camels and 50 horses out of his own resources. Muhammad(sa) himself had said that Uthman's generosity had opened the way to Paradise.

On another occasion, the Prophet(sa) promised Uthman(ra) that he himself would greet him in heaven, a promise which the old Caliph was to recall in poignant terms immediately before his death.

In the critical days of Hudaibya, it was the kind Uthman(ra) who was sent into the city to negotiate with the Quraish.

Perhaps, the highest praise of all bestowed upon him by the Prophet(sa) was the remark that even the angels stood ashamed before Uthman(ra).

With assassination of Umar in November 644, the Muslim empire was almost everywhere at peace. There was some rebellion in Armenia, but Muawiya who was now governor of Syria, sent in troops to calm the situation.

In autumn of 645, the Romans counter-attacked in Egypt regaining Alexandria. The Muslims had at this time no navy and were completely surprised when the Roman assault came by sea. However, Amr ibn Aasi was sent back to Egypt and by the following year he had again ousted the Roman contingent from Alexandria.

Realising that the Muslims had been caught completely unaware by the naval attack on Alexandria, Muawiya wrote to the Caliph asking for permission to build a Muslim fleet. Permission was granted. By 694, the Muslim fleet was assembled at Alexandria and the ships set sail into the Mediterranean and in that year, the island of Cyprus was conquered.

Three years later in 652, the Romans sent a massive naval contingent with the intention of recapturing Alexandria.

The Muslim navy brilliantly repulsed the attack – the days were past when the Roman navy could ride the sea unchallenged and make descents to the coast wherever they wished.

In 655, another decisive battle took place at Phoenix on the coast of Lycia, at which the Byzantine emperor himself was present. After heavy fighting, the Byzantine ships withdrew and the supremacy of the Muslim navy was clearly established.

On land, as on the sea, the Muslim forces were triumphant, with the notable captures of Tripoli in North Africa and the city of Persepolis in Persia.

In the task of administration, Uthman's(ra) first five to six years passed by smoothly.

The Qur'an had been written in the form of a standard book and a constabulary had been established. But the Muslims who were confidently marching ahead, in matters home and abroad, they were to be shattered by an enemy within.

It is logical to assume that not all the thousands of converts to Islam were genuine. Indeed, some of them were inwardly hostile and jealous and although these men were few, their intrigues were to change the history of Islam.

One of these vile men was a so-called convert named Abdullah ibn Sabaa. He started a vigorous campaign against the Caliph making false accusations against his rule and his governors.

Abdullah ibn-Sabaa initially started his propaganda in the cantonments of Basra and Kufa, but he was slung out, and he went to Egypt. There, he began to meet with success and a rebel army began forming.

Muawiya who was governor of Syria offered to send in troops to quell the uprising, but Uthman(ra) refused to use force. He even suggested that Uthman(ra) make his capital in Damascus instead of Medina but the suggestion was not considered in the slightest. The last thing which Uthman(ra) would do would be to leave the Prophet's(sa) city,

Finally, Muawiya proposed to send a guard of Syrian troops to Medina

but Uthman said that the soldiers would only cause an inconvenience to the inhabitants of the city.

The rebel army left Egypt early in 656 and were reinforced by some parties of malcontent which had suddenly arisen in Basra and Kufa.

Camping outside Medina, the rebels sent in a deputation to lay their grievances to three of the surviving members of the council which had elected Uthman(ra), that is Ali(ra), Zubair(ra) and Talha(ra). (Talha had been nominated by Umar(ra) but happened to be absent when the council elected Uthman(ra)).

The three councillors rebuked the mutineers severely for their conduct and the frustrated miscreants returned to camp.

It is sad to record that Muhammad, the son of Abu Bakr(ra), had been one of the ringleaders of the sedition of Egypt. The difference between this violent and ambitious agitator and his firm but gentle father, the most intimate disciple of the Prophet(sa), serves to illustrate the degeneration in morals of the new generation, brought up in the midst of wealth and luxury.

The rebel contingent then suddenly agreed to depart, but this was just a ruse.

As soon as the inhabitants of Medina had unbuckled their armour, the rebels suddenly turned round and dashed into the city and took control. The last days of Uthman(ra) were not unworthy of his high office.

As the mutineers gathered round his house and hurled abuse, he calmly faced them and promised to redress their grievances. On no account, he said, would he accede to the mutineers' demand that he forfeit the Caliphate, as that was a position granted him by God. The rebels shouted that they would accept him as Caliph no longer. If he refused to abdicate, they would fight and kill him. The Caliph replied that death was preferable to him. If he had wanted to fight against them, he said, he could have summoned Muawiya's troops from Syria.

The Friday following the riot in his house, Uthman(ra) ascended the pulpit to the great mosque to preach the Friday sermon. He appealed to the citizens of Medina not to be afraid of the disorderly soldiers and

then reminded the assemblage of the wickedness of attacking a successor to the Prophet(sa) of Allah.

Several loyal citizens rose to support the Caliph's appeal but they were set upon by the soldiers and forced to flee. Soon, the mutineers established a regular siege of the Caliph's house.

Truly, the Arabs were returning to the tribal anarchy of the Days of the Ignorance.

Ali, Zubair, Talha and a number of the Companions sent their sons along to guard the Caliph's house, but this small band of supporters was vastly outnumbered by the mutineers. At length, the mutineers succeeded in cutting off the water supply to the house. The heat was oppressive and the inmates were subjected to excessive thirst.

Umme Habiba, one of the wives of the Prophet(sa), endeavoured to lead a mule with goatskins of water to the house, doubtless remembering the great affection the Prophet(sa) had held for Uthman(ra). She thus exposed herself to insults from the mutineers, hoping perhaps that they would at least show some respect to a widow of the Prophet(sa).She was disappointed, and failed to deliver her precious load.

Rumour suddenly spread in Medina that a relief column was speeding to Medina from Syria under the command of Abdullah ibn Aamir, governor of Basra. The mutineers were alarmed and decided to press home the final attack.

Flights of arrows were directed at the house and Hasan the son of Ali and Muhammad ibn Talha were both wounded in the mêlée. Meanwhile, the Caliph's household had replied to the attack and one of the mutineers had been killed.

Some of the mutineers attempted to rush the door of the house, but Muhammad, the son of Abu Bakr(ra) collecting two companions, climbed up a neighbouring building and thence through a window into the Caliph's room.

Uthman(ra) was seated in his room, quietly reading the Qur'an when Muhammad ibn Abu Bakr and his two companions burst into the room. Sword in hand, he dashed towards the ageing man and shouting loud abuse seized him by the beard.

In his last moments, the Caliph behaved with dignity and calm which even to this day provokes our admiration and respect.

'By Allah, O son of my brother', he said quietly, 'what you are doing would have indeed been hateful to your father. But I take refuge from you in Allah'. The savage young man was momentarily taken aback by this mention of his father, the dignified and venerable Abu Bakr(ra). He stepped back.

But his two accomplices were less sensitive and rushed in forward, they attacked the Caliph with their swords. Uthman(ra) fell forward, gathering the leaves of the Qur'an to his breast while his blood saturated the pages. His wife, Naila flung herself forward to save him from the blows and had several of her fingers cut off.

Meanwhile, the mutineers had broken through the main gate and rushed into the room where they slashed the dying Uthman(ra) with their daggers and swords.

At length, the heartless and brutal killers withdrew and the Caliph's body was left lying in a pool of blood. It was 17th June, 656.

The cruel murder of Uthman(ra) was the turning point of the Khilafat-e-Rashidah. One Muslim had shed the blood of another Muslim and the bonds of Muslim harmony had been shattered.

Uthman(ra) had made an ironic prediction before his death which was literally fulfilled:

He had said: 'By God, if you kill me today, the Muslims will never unite in prayers till the end of days.

Talib(ra).

The fourth Caliph was Ali ibn Abi Talib(ra) and he inherited an empire whose capital, Medina, was being overrun by mutineers.

Ali(ra) was at first very unwilling to accept the post but he was persuaded to do so by the Muhajireen and the Ansar, and the oath of allegiance was taken in the Great Mosque.

The years ahead were to be years of struggle and civil war, and disillusionment as Muslim fought Muslim and the empire of Islam rocked to its foundations.

Ali ibn Abi Talib(ra) was the son of Muhammad's uncle Abu Abu Talib being poor, Muhammad had offered to undertake the upbringing of Ali(ra) who was thus virtually his adopted son.

When he had grown up, Ali(ra) had married the Prophet's(sa) daughter, Fatima, by whom he had had two sons Hasan and Hussein to whom Muhammad(sa) had been very devoted.

He had become a Muslim at the age of ten and was among the first three converts. Ali(ra) himself said once that Muhammad(sa) received the divine command on a Monday, and that he Ali(ra) was converted on Tuesday.

In his youth, he had been a great champion in battle. Both at Badr and at Uhud, he had stepped forward and challenged the enemy to single combat and in both instances he had killed his man.

He was a man of great intelligence and acted as a councillor and adviser to the three previous caliphs. Umar(ra) had once said that 'Ali is the best of all in judicial decisions.

He was a good speaker and very learned in the tenets of Islam When proclaimed Caliph in 656, he was already middle-aged.

With his election as Caliph, Ali(ra) was faced with the immediate problem of calming the dangerous situation now existing in Medina. There were over two thousand of these insurgents roaming the city and no troops were at hand to restore order. Meanwhile, he was approached by his principal advisers comprising Zubair, Talha and Saad ibn Waqqas and urged to apprehend the murderers of Uthman(ra) as quickly as possible.

Ali(ra) explained that he could take little action until loyal troops were able to take control of the city. In other parts of the Muslim world, things were also not well.

Ali's(ra) new nominees to the governorship of Kufa and Damascus were rebuffed. And when he wrote a letter to Muawiya, the governor of Syria (who came from the same Bani Umaiya tribe as Uthman(ra)) asking for his allegiance, there was no reply.

As Ali(ra) bided his time, Zubair and Talha decided to make their move.

Accompanied by Aisha(ra), the Prophet's(sa) widow, they set out for Mecca to raise troops and settle the matter with Ali(ra). And in September 656, three months after the murder, and when things seemed to be returning to normal in Medina, Muawiya sent word to Ali(ra) that as no action had yet been taken against Uthman's(ra) assassins, he would do things his own way.

For the first time in the annals of Islam, the word civil war had been spoken. Ali(ra) decided that the time to make a move had come. He gave orders for an expedition to go against Muawiya's Syria.

Ali(ra) left Medina with a small force in October 656. The date of his departure was doubly significant. Firstly, it meant that a Caliph was leading out an army not to fight the unbelievers but to wage war against fellow Muslims. Secondly, never again was a Muslim caliph to reside in the Prophet's(sa) city.

Zubair, Talha and Aisha meanwhile had raised a force comprising elements from Kufa and Basra. Their army gathered in Mecca, and when it departed the people of Mecca began to cry. It was a tragic day for the Muslims and for Islam, and was long remembered as the 'day of tears'.

Ali(ra) had meanwhile had crossed the desert to Dul Qar near the river Euphrates. He was short of troops and reasoned that as he had some sympathisers in Kufa, he might gain more manpower from there.

His first emissaries to Kufa met with little success but then Ali(ra) sent his eldest son, Hasan, to beckon the people to join him. The presence of the Prophet's(sa) dearly loved grandson in Kufa turned the tide.

The many Companions who had settled in the town were moved to tears at the sight of the Prophet's(sa) grandson appealing for their help. Soon, a force of nearly 10,000 men had answered the call and set out from Kufa to join Ali's(ra) army.

As the Caliph's army approached Basra, the rebel army led by Zubair and Talha came out to meet it. Ali(ra)did not want to fight if he could avoid it. And he tried to reason with Talha and Zubair. He pointed out that until order and discipline could be re-established, it would be very difficult to bring the guilty to trial.

He needed time, he argued, and this confrontation of the two forces was not helping the situation one bit. Talha and Zubair agreed to negotiate.

During the discussions, Ali(ra) and Zubair began recounting the great adventures they had shared during the time of the Prophet(sa). Zubair's mother had been the sister of the Prophet's(sa) father, and both Zubair and Ali had been friends since they were young boys. They had fought in the same regiments in the great battles of Islam, and now ironically, they were facing each other as rivals.

Zubair was moved to tears and vowed that he would never oppose Ali(ra) with force. The negotiations were going well and it seemed likely that the risk of battle would be removed. But the last thing that the murderers of Uthman(ra) wanted was that peace be restored. With the return of proper organisation, they would be hunted and punished for their crimes.

The situation with regard to the mutineers, as the two armies relaxed for the night, was this. Although they had all been opposed to Uthman(ra), some had now sided with Ali(ra) and some with Zubair and Talha.

The mutineers planned again that night and as morning approached, cries rang out from both armies that the other was attacking.

Ali(ra) immediately realised that this was a trick to force the opposing armies into battle, but his shouts to his soldiers to stay where they were, went unheeded. Within minutes, a terrible battle had begun, the plan of the mutineers had worked.

When the fighting had been joined, Zubair in compliance with his oath the previous day, withdrew from the battle. Wandering in a desert valley, he was apparently set upon and killed by some passing stranger. Thus futilely and ignominiously died one of the great early heroes of Islam.

Meanwhile, Talha(ra) too had been wounded. He had also been one of the great Companions and had had his hand crippled when he had tried to ward off arrows from the Prophet's(sa) person at Uhud. Within a few days, he too died.

The rebel army was now losing ground. Aisha who was on a camel tried to urge on the attack but to no avail.

A group of brave men gathered around her to protect her from injury. The slumbering embers of passion for the Prophet(sa) were suddenly aroused by the thought that his favourite wife was in danger.

The ranks reformed round the Mother of the Faithful. Seventy brave men died one after another, holding the bridle of the camel until Ali's(ra) concerted attack set the others to flight.

When Ali(ra) entered Basra, he endeavoured to reconcile the parties and urged everybody to forget the past and look to the future. He treated Aisha with great respect and sent her back to Medina.

In January 657, seven months after the murder of Uthman(ra), Ali(ra) entered Kufa and made it his capital.

The Battle of the Camel had been fought in December, 656. Some fifteen thousand men had lost their lives and the unity of the empire had been put in grave danger. But, now things were to become worse.

The following year, in May, Muawiya who had still not accepted Ali(ra) as the true Caliph, marched out with 50,000 men and battle was joined at Siffeen.

Before the battle, Ali(ra) again tried to negotiate but Muawiya was unwilling to comply. When Ali(ra) then challenged Muawiya to single combat, to prevent the loss of so many lives, the latter politely excused himself doubtless aware of Ali's(ra) skill as a swordsman.

The battle of Siffeen, although accompanied by heavy losses was inconclusive and an agreement was signed whereby Ali(ra) returned to Kufa and Muawiya to Damascus. Thus the situation was still unresolved. But worse was to follow.

Amr ibn al Aasi who had joined with Muawiya, marched into Egypt to remove Ali's(ra) supporters there, and in 658 and 659, attacks were launched on Iraq itself.

In 660, even worse befell. An army from Syria occupied the Hejaz and forced the people of the holy cities to accept Muawiya as caliph.

Although, Ali's(ra) troops ousted the invaders a few months earlier, trouble persisted in other areas.

At the end of 660, a kind of truce was agreed. Active hostilities ceased. Ali(ra) remained in possession of Iraq and Persia while Muawiya held control of Syria and Egypt.

Truce it may have been, but the conscientious Muslims realised that the empire lay shattered and the great conquests were at a standstill.

On 20th January, 661, Ali(ra) was assassinated as he came out to lead the prayers in the mosque at Kufa. With his violent death ended the grandeur of the Khilafat-e-Rashidah. He was 60 years old when the assassin struck. The site of his tomb is still uncertain.

After his death, Muawiya lost no time in annexing the territories which had previously been owned by Ali(ra).

Hasan and Husain, the grandsons of the Prophet(sa) were to die tragically in the civil war which was to rage in for more dreaded years- and the Muslims would regret their laxity in not uprooting the insurgents at the first hints of intrigue and treason in the time of Uthman(ra).

Allah has now granted us the opportunity to live under and serve a new blessed Caliphate.

It should be our duty to guard this institution with our lives and to pray that Allah forever save us from the troubles which afflicted the Khilafat-e-Rashindah and that He bless us with the glories that accompanied it.

A Brief History of Observatories in the Islamic World

by Zakaria Virk - Kingston, Canada

'The Christians in Spain suffered a humiliating Jehad under the superior military power of the Islamic Moorish caliphate. It was the worst of time for Europe. The glories of Rome were dust. The science of the Greeks was all but forgotten. Meanwhile, Arabic culture was at its zenith. Arabic astronomy had picked up the torch of Greek science and developed a well-integrated celestial system, elements of which are still used by astronomers today.'
(*Sky & Telescope*, USA. p.38, Feb. 2000)

An observatory is a structure built for the purpose of astronomical observation. Observations date back to many of the earliest civilizations: it is thought that Stonehenge in England and the Great Pyramid of Cheops were also observatories. In Islam this institution flowered under Caliph al-Mamun (786-833 CE) who laid the foundation of the first observatory in Islam. Astronomical observations were made under his patronage at Shamsiya, near Baghdad and at Mount Qasiyun, near Damascus. Shamasiya was supplied with a building which served as a residence and place of work for its astronomers including Sanad ibn Ali who was asked to build astronomical instruments. Yahya ibn Abi Mansur and al Abbas al-Jawhari were the two other astronomers employed in this observatory. Both these scientists took part in the astronomical observations organized at Baghdad 829-30 and Damascus 832-33.

The Shamasiya observatory was part of the *Baytul Hikma* (House of Wisdom) which was also established by al-Mamun in Baghdad. This was called *Khizana Kutub al-Hikma* (Library of Wisdom) as it consisted of a library which carried out translations of many scientific and philosophical works. Regular weekly meetings of translators and scientists were held at Baytul Hikma, in this respect it was an academy like Plato's. The famous mathematician al-Khawarizmi (780-850) was at one time librarian of this science institute.

He was one of the first to compute astronomical tables. It may be of interest that some people were sent by al-Mamun to Byzantine to purchase Greek scientific manuscripts.

Al-Biruni informs us that two solstice observations were made at Shamasiyya by Yahya ibn Mansur in the year 828 CE in which al-Khawarizmi was also present. Two more observations were made using an armillary sphere the next year and compared with the previous year. Work lasted here for a year and a half. Ibn Khalaf al-Marwrudhi was an instrument designer who made an astrolabe (an instrument used for measuring the altitude of a heavenly body and replaced by the Sextant in the 18th century). An azimuthal quadrant made in Haran was used in Maragha Observatory for the measurement of azimuths, and elevations.

Mount Qasiyun Observatory

Al-Mamun ordered the construction of an observatory at Mount Qasiyun in 830 or 831. Khalid was an important astronomer here who made an observation of a certain star in the constellation Leo in the presence of two scientists Sanad and al-Abbas. Khalid was in fact the mutawalli (supervisor). Ali ibn Isa al-Ustarlabi (d.832) was another instrument maker here who wrote a treatise on the astrolabe. Al-Mamun died on 10th August 833 (218 AH) and all activity came to an end.

Al-Biruni says that a marble mural quadrant was used at Qasiyun that had an inner radius of five metres, and had an accessory part sliding over the arc. This part had a hole through which one looked at the sun.

Al-Mamun's astronomers made observations of the sun and moon only, and some investigations of the planets and the fixed stars for which a list of star positions was prepared. The work at Shamasiya and Qasiyun resulted in the discovery of the movement of the solar apogee (farthest point), while their equinox (when Sun shines down directly on the equator of a planet) observations led to a pretty exact value of the length of the solar year.

According to Umar al-Khayyam the reason for these observations was to establish a solar calendar for Nawruz, New Years day of the Persian calendar. The emphasis on the solar and lunar observations was to calculate the eclipses.

Tables of planetary motions were constructed and presented in a book called *Zij Mumtahan*, (tested tables)

written by Yahya ibn Abi Masnur. It was also called Zij Shamasiya. All of the astronomers of al-Mamun produced a Zij (astronomical table) which is indicative of the fact that it must have been one of the primary objectives for setting up the observatories.

One of the important astronomical activities undertaken by order of al-Mamun was the determination of the Qibla. The key to such determination was the geographic location of Mecca. Al-Mamun had the latitude and longitude of Mecca determined through observations of lunar eclipses made simultaneously in Baghdad and Mecca. The surveyors measured the distance between these two cities.

A party of astronomers and expert artisans, which included carpenters and brass-smiths, went to Sinjar with instruments to measure the altitude of the sun. Three surveyors Khalid al-Maurudhi, Ali ibn Isa and Ahmad al Dharra measured the length of a terrestrial degree to ascertain the value of one stadium. The results of this expedition were transmitted by Sanad, and the expedition paid for by the Banu Musa brothers. It was thus the first systematic geodetic expedition of its kind. A large map of the world was drawn for the Caliph, who ordered two degrees measurement to be made to determine the size of the earth that came out to 20,400 miles and a diameter of 6,500 miles.

Al-Mamun was conversant with astronomy and had a genuine interest in its issues as the following incident will show. In the course of an expedition against Byzantium, al-Mamun noticed that the high mountain by which they were passing had a commanding view of the sea. He ordered Sanad ibn Ali to climb to the top of the hill and measure from it the angle of depression of the horizon at sunset. This was done and the dimension of the earth calculated from it. Al-Biruni says in his book *Qanun al-Masudi* that he himself used this method on a hill in District Jehlum in Pakistan.

The Banu Musa brothers (Muhammad, Ahmad & Hasan) made a series of observations after the demise of al-Mamun. The first two brothers directed the Sinjar and Kufa geodetic measurements. Muhammad died in 259 AH, about 40 years after the death of al-Mamun. Al-Biruni reported their astronomical observations that took place from 858-869 CE. Ibn Yunus mentions six observations, some of them the same as al-Biruni. Their fixed stars observations and measurements of the maximum and minimum altitudes of

AL-MAMUN HAD THE LATITUDE AND LONGITUDE OF MECCA DETERMINED THROUGH OBSERVATIONS OF LUNAR ECLIPSES MADE SIMULTANEOUSLY IN BAGHDAD AND MECCA. THE SURVEYORS MEASURED THE DISTANCE BETWEEN THESE TWO CITIES.

the sun took place in Baghdad from their house by the Tigris river close to the city gate called Bab al-Taq. They made arrangements for simultaneous observations of a lunar eclipse in Samarra and Nishabur.

Habash al-Hasib (864-874) was an outstanding astronomer of al-Mamun who made observations for ten years and compiled three astronomical tables. He observed the solar eclipse of 829 CE and determined the time by the Sun's altitude.

Al-Farghani was one of the greatest astronomers employed by al-Mamun. He wrote a book *Kitab fee Harakat al-Samawiya* (Elements of Astronomy) which exerted a great influence on European astronomy. This was translated by Gerard of Cremona and first printed in 1493.

Abu Hanifa al-Dinawari (815-895) was a physician and astronomer who lived in Dinawar. He authored a book *Kitab al-Rasad* in which he recorded his observations of the year 849-850 CE made from the top of a house in Isphahan. He also owned a private observatory (Sahib al-Rasad) in his hometown.

Muhammad ibn Jabir al-Battani (858-929) is considered the greatest astronomer of Islam. He had a private observatory at al-Raqqa (Syria) where he made his observations for forty years (887-918). His tables known as Zij is called Zij al-Sabi. They contain a catalogue of fixed stars for the year 880-881. He proved the possibility of annular eclipses of the sun. His astronomical tables were edited by Italian scholar C.A. Nallino and published in 1903 in Arabic and Latin.

He used the following instruments: 1. Astrolabe 2. Gnomon for precise observations 3. Sun clocks 4. An armillary sphere 5. Parallactic rulers 6. Mural quadrant 7. An alidade. It is assumed that these instruments were of larger dimensions required for the measurements of the obliquity of the ecliptic.

His famous book was *Kitab al-Zij*, an astronomical treatise with tables, translated into Latin by Plato of Tivoli in the 12th century under the title "*De Motu Stellarum*". It was first published in Nuremberg in 1537. He discovered the secular acceleration of the Moon. In 1773 The Paris Academy of Sciences awarded a prize to Edmond Halley for giving an explanation of the Moon's secular acceleration by examining solar and lunar eclipse records made by al-Battani. (Sky & Telescope magazine, October 2000, USA, page 60).

Sulaiman ibn Isma made his observations in Balkh to determine the obliquity of the ecliptic in the years 888-890. He used a mural quadrant and an alidade. He made some Equinox (day when night and day are of equal length) and Solstice (time of year when the Sun reaches its farthest North or South point, resulting in the longest or shortest day) observations also.

Mansur ibn Talha made various observations of the obliquity in Khurasan. Al-Biruni refers to his observations for determining geographical latitudes as well as his eclipse observations for measurements of the longitude. He made comparisons of the longitudes of cities in Khurasan with those of Baghdad and Mecca. He improved the value for the latitude of Mecca found in the time of al-Mamun.

Ibn Amajur: Abu al-Qasim ibn Amajur and his son Abul Hassan Ali were among the greatest astronomers of Islam. Father, son and their emancipated slave Muflih, made extensive observations between 885-933 and produced numerous Tables as recorded by Ibn Yunus(Sarton, page 630).

They made their observations in Shiraz and Baghdad, which included fixed stars, as well as lunar, solar and planetary observations. His *Zij al-Mirrikh* (tables of Mars) are very famous. It is said that they observed the image of the sun in the water.

Abdul Rahman al-Sufi (903-986) was famous for his work on fixed stars. He measured the obliquity of the ecliptic in Shiraz at the winter & summer solstices in the year 969-970 by the order of his friend Buwayhid ruler Adud al-Dawla (936-983). Al-Biruni mentions an observation of the vernal equinox and one of autumnal equinox made by al-Sufi in Shiraz. His main work with illustrations is 'Book of the Fixed Stars' (*Kitab al-kawakib al-sabitha al-Musawar*) which is considered one of the three masterpieces of Islamic astronomy,

the other two being Ibn Yunus and Ulugh Bey. (Sarton, page 666).

Ibn al-Alam (d.985) conducted most of his observations in Baghdad. The positions of Mars are more accurate in his tables than in any other; his Zij received much favor during the next two centuries. Abul Wafa al-Buzjani (940-997), a distinguished mathematician and astronomer, states in his *al-Majisti* that he made many observations for the determination of the obliquity of the ecliptic at Bab al-Tibn in Baghdad. Al-Biruni was apparently in contact with Abul Wafa for they made arrangements to observe the lunar eclipse of 997 and compare notes. Abul Wafa observed it in Baghdad while al-Biruni in Khawarizm. The difference in local time was found to be one hour.

Sharaf al-Dawla Observatory

Sharf al-Dawla son of Adud al-Dawla (982-989) built an observatory in the garden of his palace in Baghdad. He ordered the observations of the seven planets in 988 and al-Kuhi was vested with this work. A building was constructed for this purpose in his garden and had a director. Al-Kuhi designed the instruments for this Bayt al-Rasad, some of which were made by the inventor and instrument maker Abu Hameed Al-Saighani (d.990). The observations were made in the presence of judges, scientists, and scholars. Al-Biruni says that al-Kuhi constructed a spherical building in Baghdad whose floor was in the form of a section of a sphere with a radius of 12.5 metres. The centre of this sphere was located at the hole at the top of the building; solar rays entered from this aperture and traced the daily trajectories. One solstice observation was also made.

Abu Mahmud Al Khujandi (d.1000) made an important measurement of the obliquity of the ecliptic in 994 at Jabal Tabruk, near the city of Ray in Iran. The instrument constructed for this purpose surpassed all previous ones in size; it consisted of a sixty-degree meridian arc and was called *al Suds al-Fakhri* (named after his partron Fakhar al-Dawla). Suds mean the sixth part (of a circle). It had a radius of about 20 metres. This was al-Khudanji's invention, and with this instrument, degrees, minutes and seconds could be read. Each degree was subdivided into 360 equal parts, and each ten-second portion was distinguished on the scale. The arc, which was constructed between two walls, was faced with wood, and on this wooden surface were sheets of copper. He had many outstanding astronomers of his time assisting him in this work.

By the end of tenth century, the observatory was a specialised institution with fixed locations, devoted to research in astronomy. It contained many instruments and scientific staff. There was an emphasis on building large-scale instruments. Administratively it was well organized. It also had a director and was given some kind of legal status. The program of work included observations of the planets, as well as those of the sun and moon, and the compilation of new astronomical tables. An institution of this magnitude could not function without royal patronage; hence the observatory was a royal institution. Other observatories built alongside Sharf al-Dawla were Adud al-Dawla in Shiraz and Fakr al-Daula in Ray, Iran.

Maslama al-Majriti (d.1007) was a renowned mathematician and astronomer of Islamic Spain. He edited and corrected the astronomical tables of al-Khawrizmi. He wrote a treatise on the astrolabe that was translated by John of Seville. Michael Scot translated his book on astronomy *Kitab al-Haya*. Maslama created a school of astronomers consisting of his students (like al-Karmani, and ibn-Samh) marking the beginning of science as an organized activity in Islamic Spain. All his students commented on the use of the astrolabe, and Zij al-Sindhind.

Abu Rehan Al-Biruni (973-1048) was a contemporary of Ibn Sena. He built several observation posts for the measurement of the obliquity of the ecliptic as well as the determination of geographic locations. The earliest observation he made in 990 was in Khawarizm when he was a youth. He repeated measurements of latitude in several cities. He composed an astronomical encyclopedia (*Qanun al-Masudi fee Haye wal Najum*) which contains a collection of 23 observations of equinoxes beginning with Ptolemy, and ending with observations he made himself. Al-Biruni went through many ordeals while doing investigations of the latitude; so much so that he compared this to ordeals of Noah(as) and Lot(as), and prayed that he may follow them in rank in meriting Allah's mercy. The knowledge of geographical locations of cities was important to determine the direction of Qibla and also for revisions of astronomical tables. He mentioned values of longitude and latitude of Mecca with fractions smaller than a degree. To obtain this he used sizeable instruments. Astronomical tables had another utility, i.e. determination of the beginning and end of Ramadhan, though actual observation of the new

moon were equally important. This indicates that religious needs promoted the study of astronomy in Islamic countries. His writings indicate that he accepted the possibility that the Sun rather than the Earth was the centre of the solar system. He suggested that the earth revolved around the Sun and on its axis, and that the axis is tilted. He calculated the circumference of the earth to be 24757.92 miles while the current figure is 24873.75 miles. He calculated the radius of the earth to be 3938.75 miles while the current figure is 3958.78 miles. (Review of Religions, July 1998)

Cairo Observatory

Abul Hassan Ali Ibn Yunus, one of the greatest Muslim astronomers, author of the *Hakimi* Tables was a resident of Cairo, where the Fatimid caliph al-Hakim bi-Amrillah (996-1021) built an observatory for him. It was located on Mount Muqattam, near Cairo and was part of the *Darul Hikma* (Hall of Science - 1005- 1171) founded by al-Hakim. Cairo observatory (*Rasad al-Hakimi*) which was part of the Hall of Science, was one of the most famous in the history of Islam. Names of astronomers who worked here are recorded in history.

It is said that the observatory ceased operation after the death of Ibn Yunus. A copper instrument resembling an astrolabe and resting on two pillars was used for making observations. It contained twelve signs of the zodiac and was three spans in length. Ibn Khaldun (1332-1406) says that al-Hakim was guided by astrology in his decision making of state affairs. He used to ride his donkey and go to Mount Muqattam for prayers, and according to some, for spiritual contact with the stars. (Tarikh, vol. 4 pp.60-61)

Al-Hakim's treatment of the famous scientist, physicist, and astronomer, ibn al-Haisham (965-1039) and his court physician Ali Ibn Ridwan (d.1061) indicated he was unpredictable. One solar and three lunar eclipses were observed from the mosque of Abu Jafar al-Maghribi. Ibn Yunus made an observation from his grandfather's house, and still another from the roof of the old mosque, Al-Jami al-Atiq in Cairo. His house was in the Fustat quarter of old Cairo, to the west of Qarafa. He determined the latitude of this place many times. He is said to have used portable instruments. In one instance he used an instrument in measuring the obliquity of the ecliptic, belonging to al-Aziz, father of al-Hakim. His astronomical tables contained observations of eclipses and improved the values of astronomical constants. His

ASTRONOMICAL TABLES HAD ANOTHER UTILITY, I.E. DETERMINATION OF THE BEGINNING AND END OF RAMADHAN, THOUGH ACTUAL OBSERVATION OF THE NEW MOON WERE EQUALLY IMPORTANT. THIS INDICATES THAT RELIGIOUS NEEDS PROMOTED THE STUDY OF ASTRONOMY IN ISLAMIC COUNTRIES.

tables were printed in Arabic and translated into French. He solved many problems of spherical astronomy.

Hamadan Observatory

Abu Ali Sena convinced Ala al-Dawla, Ameer of Hamadan, that there were deficiencies in the ephemeredes (*Taqweem*) based on old observations. The Ameer agreed with Ibn Sena to build an observatory in Hamadan in 1023 for observations of the planets (*Kawakib*). Ibn Sena assigned his pupil and biographer al-Juzjani to prepare necessary equipment and employ instrument makers. Ibn Sena spent eight year making observations including of Venus. It is said that measurements of azimuths (east to west) and altitudes (up and down) were carried out with a certain device that embodied the principles of a micrometer. This was installed in the newly built observatory. George Sarton has described him as, 'the most famous scientist of Islam, and one of the most famous of all races, places and times.' (page 709, Sarton).

Malikshah Observatory

This was the first Islamic observatory that functioned as an institution for 20 years. Malikshah was the Saljuq Sultan (1072-1092) who founded this observatory in the eleventh century. The Madrasa system was established during his reign by his vizier Nizam al-Mulk. A group of outstanding astronomers, Umar al-Khayam, al-Asfizari, and ibn Naneeb were invited for its foundation. It functioned until the Sultan's death. The construction work was supervised by Muhammad al-Bayhaqi, while al-Mamuri was assigned to make instruments. There were eight scientists employed by this institution. Umar Khayam (1048-1123) produced al-Zij Malikshah probably during the operation of this observatory. It survived its founder for only a short while. He was one of the greatest mathematicians of mediaeval times who was also an eminent astronomer and poet. In 1074 Jalal al-Din Malikshah called him to the new observatory of Isphahan to reform the old Persian calendar. His calendar was called *al-Tarikh al-*

Jalali, its era was 16th March 1079. The calendar is very accurate, more accurate than the Gregorian calendar.

Al-Afzal Observatory

It took from 1120 to 1125 to build this observatory in Cairo. Solar observations were made here. The Fatimid Caliph al-Amir Biahkamaalh (1101-1130) was the ruler of Egypt at that time. Two of his viziers took personal interest in its foundation, al-Afzal al-Jamali, and al Mamun al-Bataihi. Among the famous astronomers who worked here were ibn al-Halabi, ibn al-Hayshami, and Sahlun who received monthly allowances from the Caliph. Among the instruments was a ring of about five meters diameter, and an alidade made of copper. All work came to an end upon the death of al-Bataihi in 1125. It should be noted that taqweem contains annual information on the daily positions of the planets, their conjunctions and oppositions, and information on solar and lunar eclipses. The observatory was also called Observatory Mosque (*Masjid al Rasad al Juyushi*) as it was later housed in a mosque. The observatory was demolished due to personal jealousies.

Abd al- Rahman al-Khazini was the author of al-Zij al Sanjari, tables giving positions of the stars for the year 1135-36. He observed and calculated positions for all planets as well as the sun and the moon at conjunctions and eclipses. He was in possession of good instruments so he could measure the obliquity of the ecliptic in Isfahan.

Tower of Seville, (Spain) Observatory

It is said that the famous Spanish astronomer Jabir ibn Aflah used the minaret of the Jami mosque in Seville for making observations. This was in fact the first observatory in Europe. Overlooking the city of Seville, it is now called La Giralda Tower. The construction of the minaret of the mosque started in 1172 and was completed in 1197. Jabir criticized Ptolemy violently in his book *Islah al-Majisti* on many astronomical matters. He placed Venus and Mercury above the Sun as opposed to Ptolemy. His book *Kitab al-Haia* (Book of Astronomy) was translated by Michael Scot (d.1235) as De Astronomica Libri IX, printed in Nuremberg in 1534. A Jewish scholar from Marseille Samuel ben Juda translated a treatise written by Abu Abdullah Muhamad ibn Muaz of Seville on the total solar eclipse that occurred in 1079. (Impact of translations on the West, page 119).

Qazi Saeed al-Andalusi (1029-16th

June 1070) was a historian of science and an astronomer who flourished in Toledo. Observations made by him and his fellow astronomers were very valuable to al-Zarqali. Abu Ibrahim Al-Zarqali al-Naqqash (1029-1087) was a Spanish astronomer and instrument maker who lived in Cordoba. He was the best observer of his time, who made his observations in Toledo in 1061 and 1080. His influence on medieval European astronomers was considerable; his Toledan tables formed the basis of later work. These tables were mainly based on his own observations, but also upon those directed by Saeed al-Andulasi (1029-1070). Many Muslim and Jewish astronomers also participated in their preparation. Al-Zarqali (Arzachel) was an illiterate coppersmith who was employed by astronomers to make instruments. He was so successful in his art that he started studying astronomy. Soon he became a prominent member of the group of scientists engaged in preparing Toledan tables. He invented an improved astrolabe called Safiha that is a universal instrument for planetary observations. He was the first to prove explicitly the motion of the solar apogee with reference to the stars; according to his measurements it amounted to 12.04" per year (the real value being 11.8"). (Sarton 758). Ibn Bajja (d.1139) made an observation from the roof of his house and saw two specks on the surface of the sun. His calculations corresponded with those of Mercury and Venus, he concluded that these two spots must be these two planets. Though he was not a professional astronomer, it appears that his housetop was equipped with certain instruments to make observations. Sooted glass may have been used to look at the sun.

Morroco (Fes) Obervatory

The observatory in the city of Fes, in Morroco, was called *Burj al-Kawakib* (Tower of Stars). The purpose of its foundation in the 12th century was observations of the new moon. It remained operational for several centuries. Noor al-Din Ishaq al-Bitruji (d.1204-Albetragius) was born in Morroco, but lived mostly in Seville. He did not trust the human senses given the distance between the observer and the spheres. His astronomical system exerted a deep influence on European scholars up to the time of Copernicus who cited his system in his book *Die Revolutionibus*. Roger Bacon expounded his system in detail discussing his theory of tides in his work *Opus Majus*.

Maragha Observatory

When Helagu Khan captured Alamut

in Syria in 1256, many astronomical instruments were found in the mountain fort. Among these were, a celestial globe (*dhat al kursi*), armillary sphere, a half astrolabe (*nisfi*), a parallactic ruler, and *Shua*. Nasir al-Din al-Tusi (1201-74) is supposed to have worked there. Maragha was one of the most famous Islamic observatories built in the thirteenth century in Maragha, a city of Azerbaijan, Northwest of modern Iran. Its foundations were later excavated by Russian archaeologists. Al-Tusi suggested to Helagu Khan to build this observatory, and construction work started on a hill in April 1259. The flattened top of the hill is about 400 metres in length and 150 metres wide. Water was raised to the top of the hill with special devices. A mosque and Helagu's residence on the top of the hill was built by Muayya al-din al-Urdi. The building had a dome and its library contained some 400,000 volumes. There was a hole on the top of the dome through which sunrays entered. The image thus formed served for the measurement of the mean motion of the sun in degrees, and in minutes. Various times of the day were also determined in such a way. There were representations of celestial spheres, illustrations of the phases of the moon and signs of the zodiac. There were also terrestrial and celestial globes, maps of seven climes, and illustrations regarding the length of the days and nights. A terrestrial globe was made of pulp paper (or cardboard). A metallic celestial globe constructed in 1279 by Muhammad ibn al-Urdi (son of Muayyad al-din) is still preserved in Dresden Museum, Germany. The armillary sphere was fixed on the ground; traces of the places where instruments were placed can still be seen today. Al-Urdi has given a detailed account of the instruments, which included a mural quadrant, an armillary sphere with five rings and an alidade, a solsticial armilla, an equinoctial armilla, an azimuth ring with two quadrants equipped with alidades for the measurements of angles of elevation, a parallactic ruler, an instrument to determine azimuths, sine and versed sine instruments, and models of instruments prepared by al -Urdi.

Nasir al-Din al-Tusi (d.1274) was director of this observatory. Helagu Khan never took a trip without consulting him. The main achievement of this observatory was the Ilkhani Zij completed in 1271, a copy of which exists in Bibliotheque Nationale in Paris (MS No. 779). There were 15 astronomers employed here including Ali ibn Umar al-Qazwini, al-Urdi, al-Akhlati, al-Maraghi, al-Maghribi and Qutub al-

IT IS SAID THAT THE FAMOUS SPANISH ASTRONOMER JABIR IBN AFLAH USED THE MINARET OF THE JAMI MOSQUE IN SEVILLE FOR MAKING OBSERVATIONS. THIS WAS IN FACT THE FIRST OBSERVATORY IN EUROPE. OVERLOOKING THE CITY OF SEVILLE, IT IS NOW CALLED LA GIRALDA TOWER, AND VISITED BY MILLIONS INCLUDING THIS AUTHOR IN 1999.

Din al-Shirazi. The revenues for the operation of this observatory were provided from *Waqf* (Islamic charitable endowments). It is said that twenty thousand dinars were spent on instruments.

> 'The principal achievement of this observatory was the issue of a revised set of astronomical tables for computing the motions of the planets, together with a new a star catalogue.' (*Short History of Science*, W.T. Sedgewick, 1939, NY.)

The observatory continued its operation under seven Ilkhani rulers. One of the rulers appointed Asil al-Din (d.1306) son of Nasir Al-Din as its director. It ceased operation under Uljaytu Khan in 1316.

Tabriz Observatory

The Ilkhanid ruler Ghazan Khan (1295-1304) built a mausoleum for himself along with other buildings consisting of a mosque, a monastery, two madrasas, a hospice for sayyids, an observatory, a hospital, a library, a house of law, a place of ablutions, a bath house, and a primary school. This complex was called *Abwab al-Birr al-Sham* as they were located in the suburb of Sham in Tabriz, Iran. The foundation was richly endowed and *Waqf* revenues were provided for its maintenance. A clock of great complexity was built for the observatory. Ghazan Khan had a very good knowledge of medicine besides astronomy. He visited Maragha observatory many times. The construction was completed in 1304, and it remained operational for 15 years. The observatory provided salaries for a *mudarris* (professor) and a *mueed* (assistant), as well as for a treasurer. It is said that Ghazan Khan prepared a new calendar as he decided to unify different calendars. The Khani solar calendar was adopted in 1302.

Samarqand Observatory

Samarqand was an important cultural centre during the reign of Sultan

Timur (1369-1405) who built an observatory in this city in 1402. During the reign of Timur's grandson Muhammad Turgay Ulugh Bey (1394-1449), the scientific activity in the city reached its zenith. Prince Ulugh Bey himself an accomplished scientist enjoyed to indulge in mathematical and astronomical matters. Al-Khashi, Qazizadeh al-Rumi and Ali Qushji (d.1474) were leading astronomers at this institution. Ulugh Bey took part in all the scientific meetings that took place in his palace before the construction of the observatory. The astronomical tables prepared by him in 1437 are called Zij al-Gurgani. Al-Birjandi wrote Sharh Zij Ulugh Beyk, a commentary on the astronomical tables of Ulugh Bey. He also wrote a book on instrument making (*Risala fee Alate Rasad*) a manuscript preserved in Raza Library, Rampur, India. Instruments for this observatory were made by Jalal al-Din al-Usturlabi. A copy of Ghiys al-Din Al-Kashi's book *Miftahul Hisab*, in his own handwriting, is preserved at Nur Osmania Library, Turkey. Al-Kashi says in the introduction to his book that he wrote this for Bey's library attached to the observatory.

Ulugh Bey was himself director of this observatory; he made observations of the fixed stars for eight years 1430-1437. It remained operational for thirty years. The monumental size of the round building and its huge meridian arc made of masonry are a living testimony to its founder. The radius of the arc was equal to the height of the dome of the magnificent Ayasofya Mosque in Istanbul. There were beautiful models of ten celestial spheres, the seven known planets, and the fixed stars. There was a terrestrial globe divided into climes, mountains, seas and deserts.

In 1908, the Russian scientist Vjatkin unearthed the underground remains of the meridian arc which was the major instrument of the observatory. The main observatory building was on the top of an 85-metre mountain, and the height of the building was about 30 metres. The building was demolished 50 years after Bey's death, mainly to make use of the marble. It is stated in some sources that the obliquity of the ecliptic was measured here with the help of Sudsi Fakhri. In India, Raja Jai Singh prepared astronomical tables and in the introduction, he spoke of :

> ‘instruments such as those which were constructed in Samarqand’.

They include an armillary sphere and a parallactic ruler. Al-Kashi has

mentioned in his *Zij Khaqani* that a mural quadrant, a sun clock on the palace wall, water clocks and an astrolabe were also used here.

Istanbul Observatory

This observatory was founded on the suggestion of the Egyptian Taqi al-Din Ibn Maruf to Sultan Murad III (1574-1595). The construction work completed in 1577, the year the famous comet appeared on the skies. Taqi al-Din was the director of the observatory. The design of the main building was elaborate, with residence for the astronomers, administrative offices, and a library. There was a deep well or a tower for the daytime observation of the stars. Unfortunately the building was demolished in 1580 on advice received by Sultan Murad from religious leader Shayk al-Islam Qazidada. Taqi al-Din is reported to have measured the latitudes, and longitudes of all parts of the earth. Some of the instruments (compasses & rulers) used were portable. There were 15 astronomers on its scientific staff. The Astronomical tables of Ulugh Bey were revised here. Instrumentsused here are similar to those used by Tycho Brahe (1546-1601) in his observatory in Denmark.

Indian Observatories

Following the Islamic tradition, Maharajah Sawai Jai Singh (1686-1743) built several observatories in Indian cities including Dehli, Jaipur, Banares, Mathura and Ujjain, between 1728 and 1734. Instruments in these observatories were made of stone and lime, as brass instruments could not be large enough to indicate the minutes. Jai Singh made observations for seven years and made a star catalogue. He also prepared astronomical tables Zij Muhammad Shahi, for his patron Sultan Muhammad Shah.

Summary

In all the observatories mentioned here, many things were strikingly similar. For instance astronomical tables were prepared, larger mosques were used for astronomical observations, large instruments were used for which special buildings were constructed. These observatories were state institutions patronised by Kings, Sultans, and Ameers. There were huge libraries attached to the observatories with useful books on mathematics, algebra, medicine, geometry, and astronomy. People of various professions cooperated in their planning and construction. The administrative staff included treasurers, librarians, and clerks. These observatories were places where scientific ideas were exchanged, discussions held and revised theories

created. Mathematical sciences and astronomy was taught to budding scientists.

Astronomers of Islam sought to increase the sensitivity of the instruments and to render possible the detection and reading of increasingly smaller fractions of a degree by augmenting the size of the instruments. The meridian arcs of al-Khudanji and Ulugh Bey can be cited in this connection. The main work done in these observatories was of course to prepare astronomical tables based on fresh observations, but planetary motions and trajectories were also studied. Calendars were revised, and times figured out for religious festivals. At the Qasiyun observatory daily observations of the sun and moon were made for a whole year, while Jabir ibn Aflah also speaks of daily observations of the sun in Spain.

Islamic Influence on Europe

Modelled after the Islamic observatories, many observatories sprang up in European cities like Paris (1666), Greenwich (1675), Leiden (1632), and Copenhagen (1637). Prior to these, Tyco Brahe had built two observatories on the Island of Hveen in Denmark. The Kassel observatory (1561) of Wilhelm IV of Hesse (1532-1592) was the first European observatory comparable to Islamic ones. Wilhelm IV observed a comet in 1558 using instruments originally developed in Islamic observatories. Greenwich observatory was equipped with a seven foot radius sextant and two pendulum clocks supplied by John Flamsteed. In addition there were two telescopes. The Paris observatory had a deep well that was used for daytime observations. There was also a quadrant of nine feet radius and a six feet sextant. A private observatory was built in Danzig (Poland) by Hevelius in 1639. Most of these observatories were connected to universities in those cities.

Astronomical tables were made or old ones revised in these institutions; for instance Tycho Brahe's tables were revised in Greenwich. Copernicus is reported to have used instruments similar to those designed for the Maragha Observatory. Al-Kashi has mentioned a ruler which was later used by Tycho Brahe, who used many Islamic instruments of great size like a mural quadrant, a wooden quadrant, brass azimuth quadrant, armillary sphere, and the parallactic ruler in his observatories in Uraniborg (1575), and Stjerneborg (1584). After 21 years, work could not continue as his patron Frederick II, King of Denmark died. Later on these observatories were moved to Prague and Benatky,

where his patron was Rudolph II Emperor of Germany. It is a fact that Islamic scientific influences played a great part in the renaissance of the 12th century through translations of Arabic books and scientific treatises. In the fifteenth century it was Germany that came into close contact with the learning of Islam, specifically the Ottoman Empire. *Elements of Euclid*, written by al-Tusi was published in Arabic in Rome at the end of 16th century. In the middle of the 17th century, al-Tusi's ideas on Euclidean postulates became available in Latin translations that influenced the work of Girolamo Saccheri in the 18th century. There is a striking resemblance in the trigonometries of al-Tusi and German astronomer (Johann Muller) Regiomontanus (1436-76). The lunar theory of Ibn al-Shatir was identical to that of Copernicus except for trivial differences in parameters. According to E.S. Kennedy:

> 'the universes of these two individuals are geocentric and heliocentric respectively.'

It is said that Copernicus used a cinematic device thought out by al-Tusi. The instrument *torquetum* (the Turkish instrument) was also widely used in Europe.

Muslim astronomers have left on the sky traces of their knowledge, which can be seen in the names of various stars including Acerb (scorpion), Algedi (kid), Altair (flyer), Deneb (tail), Pherkad (calf), Alcaid (blue-white star), Alcor (white star), Aldebaran (red star in constellation Taurus meaning follower from the Arabic *al-dabaran*), Algol (in Perseus), and Altair (bright star in constellation Aquila).

Then there are technical terms that are Arabic in origin such as azimuth (Arabic al-Sumut – the ways), nadir and zenith (Arabic al-Samt), Alidade (Arabic al-idadah – moving radius), Almanac (Arabic al-Manakh). Two surface areas of the Moon in the Sea of Nectar are named after Albategnius (Al-Battani), and Abulfeda, while a surface area in the Sea of Clouds is called Arzachel (al-Zarqali).

In conclusion we must state that Islamic civilization was indeed the birthplace of observatories. Early European observatories grew out of the observatories of medieval Islam, and their influence is etched in astronomy to this day.

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