# The Great Muslim Scientist

# Imam Ja’far Ibn Muhammad as-Sadiq (a.s.)

## Translated by: Kaukab Ali Mirza

And

# The Qur’an and Modern Science

## By

## Dr. Maurice Bucaille

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| Title | : | The Great Muslim Scientist |
| Translated by | : | Kaukab Ali Mirza |
| Earlier Published by: | : | **World Islamic Network,**  67/69, H.Abbas (a.s.) Street, Mumbai- 400009. |
| Republished by | : | Ja’fari Propagation Centre  94, Asma Manzil, Room No. 10, Bazar Road, Opp. Khoja Masjid, Bandra (W), Mumbai –50.  Tel.: 2642 5777, E-mail: [jpcbandra@yahoo.com](mailto:jpcbandra@yahoo.com)  jpconline.org |

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# Introduction

This book is a translation[[1]](#footnote-1) of Maghze Mutafakkir Jehan Shia, the famous Persian book, which has been published four times in Tehran, Iran. The Persian book is itself a translation from a French thesis published by The Research Committee of Strasbourg, France, about the contribution of Imam Ja’far as-Sadiq (a.s.) to science, philosophy, literature etc.

Members of the Research committee have done a wonderful job and deserve thanks and gratitude from all those who love the Imam (a.s.). However, I cannot help commenting that when the learned scholars, who were engaged in research, failed to find worldly sources of Imam’s knowledge, they indulged in wild speculations and guesswork and were even guilty of misrepresenting historical facts to prove that Imam Muhammad al-Baqir and Ja’far as-Sadiq (a.s.) had acquired their knowledge through the following sources:

1. The Great Library of Alexandria.

2. Coptic Scholars of Egypt.

3. Books of Greek Philosophers.

4. Persian Physicians.

## Library of Alexandria

The library, which was established by Ptolemy I, was burnt down about 600 years before Muslims entered Egypt. There was no trace of scientific books of Coptic scholars in that country at the time of the Imam. Philip K. Hitti has described the burning of that library in The History of The Arabs:

“The story that by the order of the Caliph, Amr, for six months fed numerous bath furnaces of the city with volumes of Alexandrian Library is one of those tales that makes good fiction but bad history. The great Ptolemic library was burnt as early as 48 B.C by Julius Caesar. A later one referred to as the Daughter Library, was destroyed about A.D 389 as a result of an edict by Emperor Theodosius. At the time of the Arab conquest, therefore, no library of any importance existed in Alexandria.[[2]](#footnote-2)

## Coptic Scholars of Egypt

Macedonian General, Ptolemy I, had become Pharaoh, with a court that spoke Greek. He established a museum and a library in Alexandria. During the reign of the first two Ptolemies, the two institutions proved to be of great help in spreading knowledge, but even before they were burnt and destroyed by the Romans, they had ceased to serve any useful purpose. When the Arabs conquered Egypt, the country was under total darkness. There was no lamp and no light that could have illuminated the Muslim world. H.G. Wells has described the state of affairs in Alexandria, after the first two Ptolemies, in the following words:

“For a generation or so during the reigns of Ptolemy I, and Ptolemy II, there was such a blaze of knowledge and discovery at Alexandria as the world was not to see again until the sixteenth Century A.D. but it did not continue. The Museum produced little good work after the first Century of activity.”[[3]](#footnote-3)

“So it was this blaze of intellectual enterprise never reached beyond a small circle of people in touch with the philosophers collected by the first two Ptolemies.

It was like the light in a dark lantern, which is shut off from the world at large. Within, the blaze may be blindingly bright, but nevertheless, it is unseen. Presently a darkness of bigotry fell upon Alexandria. Thereafter, for a thousand years of darkness, the seed that Aristotle had sown lay hidden. Then it stirred and began to germinate.”[[4]](#footnote-4)

The name of the Christian, Jewish, Sabean, and Zoroastrian scholars, who made contributions to the intellectual awakening and progress of the Arabs after the conquest of Syria, Iran and Iraq, are recorded in history. Many of them had become converts to Islam.

However, we do not find the name of a single Coptic scholar in the list of these luminaries. Learned members of the Committee, who researched the life of Imam Ja’far as-Sadiq (a.s.), did not and could not mention a single Coptic scholar who might have come to Medina to educate the Muslims.

If there were any Coptic scholars in Egypt they would have gone to Baghdad, which was nearer to Alexandria and was the seat of the government, where they could have gained favor of the caliph, won fame, and made a fortune. They would not have made a long and arduous trek to Medina to give lessons to the Imams (a.s.) in astronomy, geography, physics and chemistry with no hope of recovering their expenses. Moreover, by doing so they would have definitely incurred the wrath of the people in power who were hostile to the Imams (a.s.).

There was also the language problem. It would have been very difficult for Coptic scholars to translate into Arabic what they had learnt in Greek, when there were no equivalent scientific and technical terms in Arabic. Even up to the time of Ma’mun, who was giving gold equal to the weight of Greek books, which were translated into Arabic, there were few scholars in the Muslim world, who could do the job, take that rich reward, earn fame and get a lucrative post in the Translation Bureau of the Caliph.

Since there were no scholars who were proficient in Greek as well as in Arabic languages, most of the Greek works were first translated into Syriac, an old language of Syria, by the scholars, who knew Greek as well as Syriac. Then they were translated from Syriac into Arabic by young Syriac knowing scholars who had also studied Arabic. The difficult passages in the original were translated word for word. Where no Arabic equivalent was known, the Greek terms were simply transliterated with some adaptations.

## Books of Greek Philosophers

Imam Ja’far as-Sadiq (a.s.) had attacked the theories of Ptolemy and Aristotle, when he was a student in the Academy of his father, Imam Muhammad al-Baqir (a.s.), who died in 114 A.H., when the Umayyads were in power. No scientific, mathematical, or philosophical books were received or translated in that period. The work of collection and translation of books began when al-Mansur assumed the caliphate in 136 A.H. In the year 154 of the Hijra, six years after the death of Imam Ja’far as-Sadiq (a.s.) an Indian traveler introduced a treatise on astronomy in Baghdad, which was translated into Arabic by Muhammad Ibne Ibrahim on the order of al-Mansur. The same traveler introduced another treatise on Mathematics by means of which the numerals, which are called Arabic numerals, entered the Muslims world. It was the temptation of a handsome reward, which had lured the people to bring books to Baghdad.[[5]](#footnote-5)

Al-Mansur dispatched emissaries as far as Constantinople to Emperor Leo, in quest of Greek works, and is reported to have received from the Byzantine emperor a number of books including Euclid.[[6]](#footnote-6)

Al-Hajjaj Ibne Yusuf Ibne Matar (169-216 A.H) is credited with making the first translation of the Elements of Euclid and one of the first of Almagest of Ptolemy. But these translations had not been done properly and had to be revised or retranslated during the caliphates of ar-Rashid and al-Mamun.

One of the pioneer Greek translators was Abu-Yayha ibn al-Batriq (179-189 A.H.). He is reported to have translated major works of Galen and Hippocrates for al-Mansur. He is also said to have translated Ptolemy’s Quadripartitum.[[7]](#footnote-7)

Translation work was done sporadically for al-Mansur and ar-Rashid. In 213 A.H. al-Mamun established his Bayt-al-Hikma, which was a combination of Library, Academy and Translation Bureau. He appointed Hunayn ibn-Ishaq as the Superintendent of the Bayt-al-Hikma. As the chief translator of scientific works he was assisted by his son, Ishaq, his nephew Hubaysh ibn al-Hasan and many other students.

Since most of the translators were Aramaic (Syriac) speaking, many of the Greek works, were translated first into Aramaic (Syriac) before their rendition into Arabic. In many cases Hunayn did the initial translation from Greek into Syriac and his colleagues took the second step and translated them from Syriac into Arabic. Aristotle’s Hermeneutica, for instance, was first done from Greek into Syriac by the father and then from Syriac into Arabic by the son, Ishaq, who had studied Arabic. He is credited with translating the works of Galen, Hippocrates and Dioscorides as well as Plato’s Republic, Aristotle’s Categories, Physics and Magna Moralia.[[8]](#footnote-8)

Another famous group of translators was Thabit ibn Qurrah (219-284 A.H) and his disciples, who were mostly Sabeans from Harran.

They were star-worshippers and as such were interested in astronomy and mathematics. Most probably they studied those subjects from Ja’far as-Sadiq (a.s.) or his students. Thabit and his disciples are credited with translating Greek mathematical and astronomical works including those of Archimedes. He also revised the previous translation of Euclid.

## Persian Physicians

In those days there were no colleges in many places like Jundi Shahpur, where students could go and learn the science of medicine. If someone wanted to work as a physician, he had to serve for decades as an apprentice under an experienced physician. Medical knowledge could not be acquired simply by reading books, since they were not available.

Iran made little contribution to the world of science, medicine and philosophy. Only one book of astronomy is reported to have been translated from Pahlavi into Arabic in 198 A.H. by al-Fadl ibn Nawbakht, the chief librarian of ar-Rashid. Ibn al-Muqaffa translated the famous book of fables, Kalilah and Dimna, from Pahlavi into Arabic.

“Except in the arts of belle-letters Persia did not have much that was original to contribute. The aesthetic temperament of Iranian population was a sorely needed element in the cultural life of Semitic Arabians. Next to the artistic, the literary, rather than scientific or philosophical was the influence most clearly felt from Persia.[[9]](#footnote-9)

Jundi Shahpur in Iran was noted for its Academy of Medicine, which was established by Anusharwan in 555 A.D. According to some historians, the Greek system of medicine was being taught in that institute, but the language of instruction was Aramaic (Syriac). In 765 A.D. Caliph al-Mansur appointed Jurjis ibn-Bakhtishu, the dean of the hospital, as his court physician. Abbasid caliphs, who were patrons of the Academy, could not find a single book on philosophy, medicine or any scientific subject which was considered suitable for translation into Arabic.

Imam Ja’far as-Sadiq (a.s.) did not serve as an apprentice under any Persian physician; and he could not have obtained and studied the books on medicine, written in Pahlavi script during the pre-Islamic period. It is, therefore, preposterous to presume that he had learned the science of medicine from the Iranians.

The above facts conclusively prove the contention of the Shias that their Imams had supernatural knowledge (Ilm-e-Ladunni). Said Ali Ibn Abi Talib (a.s.):

“You should know that the knowledge, which came from heaven for Adam and every kind of knowledge which adorned all the prophets of God including Prophet Muhammad (May Allah bestow His Blessings upon him and his progeny) is with his descendants.”[[10]](#footnote-10)

Aristotle, the teacher of Alexander, was well-known to the Arabs. They called him Muellim (the Teacher). They must also have become familiar with the names of Ptolemy, Socrates, Plato and other philosophers of Greece and Alexandria, but they did not know what they had written and what they had said.

Imam Muhammad al-Baqir and Ja’far as-Sadiq (a.s.) knew that the Muslim world would be flooded with books of the philosophers of Greece and Alexandria and that the Muslims would blindly accept everything they had written as Gospel truth. Thus, many of their false and fallacious theories would catch their imagination, corrupt their minds, and keep them under total darkness for Centuries, which is actually what happened. For example, the theory of Ptolemy that the earth is the center of Universe and the sun, the planets and the stars rotate around it was generally accepted by the Muslims as correct.

The two Imams (a.s.) explained to their students, who were to spread their teachings among the Muslims, the theories of those philosophers, pointed out their mistakes and presented their own correct theories. Similarly they taught them physics, chemistry, geography, etc, prior to the translation of these subjects from Indian, Greek and Persian into Arabic. Because they were the Imam’s (representatives of Almighty Allah on earth) they had the knowledge of the theories of Greek philosophers and others. There can be no other explanation.

## Intellectual Awakening of the Muslims

The momentous intellectual awakening of Muslims witnessed in the second Century of the Hijra was not due to Hellenic or other foreign influences, as some Western historians have recorded. It was the result of untiring and ceaseless efforts by the members of the Prophet’s family, who worked hard under hostile conditions and made great sacrifices to bring about that golden age of knowledge.

It is an irony of fate that bloodthirsty Bani Abbas, who were never interested in knowledge, took the credit for the intellectual awakening of Muslims. The standard of morality, knowledge and intelligence of as-Saffah, al-Mansur and other members of that tribe can be judged by the heinous and horrid acts of savagery they perpetrated. They murdered in cold blood thousands of innocent Muslims, men, women and children. They feasted merrily amid moaning and groaning of their guests, whom they had invited and then cut into pieces. They exhumed the dead bodies of Umayyad caliphs from the graves, flogged them and burned them.

Among all the Abbasid caliphs, only al-Mamun was interested in knowledge. The rest of them were interested in accumulation of wealth, a luxurious life, worldly pleasures and satisfaction of their carnal desires.

Historians and storytellers have placed a halo of glory and grandeur around the head of Harun. He was nothing but a tyrant and a despot. He slaughtered the whole tribe of Barmakids simply because his vizier, Ja’far had children from his sister, Abbasa. They were legally married by the caliph himself. His palace with its annex for his harems, slave girls, eunuchs and functionaries occupied one third of the city of Baghdad. He was more interested in frivolous pastimes, belly dancers and drinking wine than in science and literature.

“Like a magnet the princely munificence of Harun, the beau ideal of Islamic kingship, and of his immediate successors attracted to the capital, poets, wits, musicians, singers, dancers, trainers of fighting dogs and cocks and others, who could amuse, interest and entertain.”[[11]](#footnote-11)

The bayat (oath of allegiance) to as-Saffah, the first Abbasid caliph, was taken in 132 A.H. He spent most of his time killing people and consolidating his position. He died in 136 A.H. and was succeeded by his brother, al-Mansur.

When things settled down, al-Mansur found, to his great consternation, that if Bani Abbas had built an empire on the dead bodies of the Muslims, Imam Ja’far as-Sadiq (a.s.) had built a greater and more lasting empire in the hearts and minds of the Muslims. If the name of al-Mansur was recited from every pulpit in Friday Sermons, the name of the Imam (a.s.) was also mentioned everywhere in the Muslim world. The teachers and preachers of every sect of Islam used to say, “Qala al-Alim”, meaning ‘the Knowledgeable (Imam) said’, to prove the authenticity of the traditions they quoted.

Muslims had great love and respect for the Imam (a.s.), because he descended from their Holy Prophet (s.a.w.a.) and because he was the most pious and learned man in the Muslim world.

This made al-Mansur jealous. He was also suspicious of the sincere efforts of the Imam (a.s.) to spread knowledge among Muslims.

## al-Mansur closes Medina Academy

It is reported on the authority of Mufazzal bin Umar that al-Mansur wanted to kill Imam Ja’far as-Sadiq (a.s.). He called him many times with this intent, but when he saw him, he was filled with fear and could not carry out his vicious plan. Instead, he placed the Imam (a.s.) under house arrest. For a long time, the followers of Imam (a.s.) were not allowed to see him and he was not permitted to see them. This put the Shias under great hardship. They could not consult their Imam (a.s.), even on such matters as marriage, divorce, and etc.[[12]](#footnote-12)

After the death of Imam Ja’far as-Sadiq (a.s.), no Imam was allowed to live permanently in Medina and spread knowledge among Muslims. They were exiled to Basra, Baghdad, Samarrah or Marv, where they were either held in prison or placed under house arrest.

It was easy for al-Mansur to close the Academy of Imam Ja’far as-Sadiq (a.s.) by putting him under house arrest or by killing him, but it was very difficult to eradicate his influence from among the Muslims. They loved him for his ancestry, his piety and his knowledge. Moreover, he had taught and trained 4,000 to 12,000 students, who were spreading knowledge among the masses. Some of them were great scholars of Qur’an, Tafsir, Islamic jurisprudence, history and literature and some were great physicists, chemists, astronomers and mathematicians.

Since al-Mansur could not find in the Muslim world anyone who could rival the Imam in physics, chemistry, astronomy, mathematics and other sciences, he spent large sums of money and imported books from different countries on scientific subjects. They were translated into Arabic, and taught in schools and colleges. Gradually the names of Socrates, Plato, Aristotle, and Ptolemy became household words and their scientific and philosophical theories captured the imagination and dominated the thoughts of Muslims for Centuries. The scheme proved so successful that in the course of time, Muslims totally forgot about the scientific achievements of the Imam (a.s.) and important discoveries made by him.

Kaukab Ali Mirza

# Preface

Learned scholars from Europe have been studying Islamic Literature from the beginning of the 17th Century. It was only after the expansion of their universities that American scholars started doing research on Islamic subjects.

American and European scholars have written many books, after years of research, on Islam and great Muslim scholars. A number of them have been translated into Persian. I have translated some of them myself, which have been published in Iran.

Upto the Second World War, American and European scholars were not interested in studying the literature of Twelver Shias. It was only after World War II that they showed some interest in the Shia faith and its heroes.

The Research Committee at Strasbourg, which studied the life of Imam Ja’far as-Sadiq (a.s.) and published this thesis, is engaged in the study and investigation of all religions of the world, including Islam.

Members of the Research Committee, except the lecturers at the University of Strasbourg, are not permanent residents of that city. Most of them live in other countries and send their research papers to the office of the Committee periodically. As reported by one of the professors, who teach Persian language in that university, the members meet every two years to exchange views.

Names of some prominent scholars, who are members of The Research Committee of Strasbourg, France, are as follows. Most of them are professors and lecturers of different universities in Europe and the United States:

1. Mr. Arman Bull, University of Brussels

2. Mr. John Oben, University of Brussels

3. Mr. Robert Brunswick, University of Paris

4. Mr. Claude Cohen, University of Paris

5. Mr. Henri Corbone, University of Strasbourg

6. Mr. Tofiq Fahal, University of Strasbourg

7. Mr. Fanciso Gabreili, University of Rome

8. Mr. Richard Graham Lynch, University of Germany

9. Miss Ann Lipton, University of London

10. Mr. Evan Lenan, University of Chicago

11. Mr. Henri Matisse, University of Paris

12. Mr. Husain Nasr, University of Tehran

13. Mr. Charles Pila, University of Paris

14. Mr. Musa Sadr, Great Scholar, Sur, Lebanon

15. Mr. George Wazda, University of Lyons, France

16. Mr. Arna Ludz, University of Lyons, France

17. Mr. Elyas, University of Los Angeles

18. Mrs. Duran Hynch Cliff, University of London

19. Mr. Joseph Manuz, University of Freebourg Germany

20. Mr. Hans Muller, University of Freebourg Germany

21. Mr. Hans Romer, University of Germany

22. Zabih Ullah Mansuri, Tehran-Iran

# Birth of Imam Ja’far As-Sadiq (a.s.)

Imam Ja’far as-Sadiq (a.s.) was born in Medina, on 17th of Rabi ul-awwal, 82 A.H. His father was Muhammad bin Ali al-Baqir (a.s.). When he grew up he became famous as Ja’far as-Sadiq (a.s.).

There are a number of stories about the childhood of Ja’far as-Sadiq (a.s.). It is said that he was born circumcised and with a full set of teeth. There is another story that says he began to speak as soon as he was born.

It is also reported on the authority of Abu Horera, a famous companion of the Prophet, that the Prophet of God had said about Ja’far as-Sadiq (a.s.) that one of his descendants would become famous as as-Sadiq (truthful).

Four facts show us that from his childhood, Ja’far as-Sadiq (a.s.) was favoured by nature:

1. He was born very weak, but did not suffer from any childhood disease, which were common in those days. After two years he became quite robust and strong.

2. Ja’far as-Sadiq (a.s.) was born in a well-to-do family. His father and grandfather were men of substance in Medina.

3. His father, Muhammad al-Baqir (a.s.), was a learned man and his mother, Umme Farva, a descendant of Abu Bakr, was also an educated lady.

4. His father and mother started teaching him when he was only two years of age.

As a rule, children whose fathers and grandfathers are learned persons, have better chances of becoming learned than those who come from ordinary families. The father and grandfather of Ja’far as-Sadiq (a.s.) were great scholars. His grandfather, Ali ibn Husain (a.s.), had written a number of books whose names have been mentioned by Ibn Nadim in his book, Al-Fehrist, although there is no trace of them today.

Ja’far as-Sadiq (a.s.) had many brothers and sisters. His parents educated them all, but they paid special attention to him from the time he was 2 years old, because of his supernatural intelligence and wonderful memory.

The old family house of Ja’far as-Sadiq (a.s.), which was on one side of the Mosque of the Holy Prophet (s.a.w.a.) and where his great grandfather, Husain ibn Ali (a.s.), was born, was demolished at the time of the expansion of the Mosque. From the money that was received from the public treasury in compensation, a plot of land was purchased by the side of newly constructed road, called Musqa and a house was built there. That house, just like all the new houses of Medina, was constructed by Iranian architects.

The courtyard of that house, which was probably planned by his great grandfather, Ali ibn Abi Talib (a.s.), was spacious and provided a good playground for children. After finishing his lessons Ja’far as-Sadiq (a.s.) used to play with his friends there.

There are different reports as to when he started attending classes, which were run by his father. Some say that it was at the age of 3 years, and others say at the age of 5. One of the Muslim historians of North Africa, Muhammad Abu Bakr, well known as Ibn Abi Rindega, who was born in 451 of the Hijra and died in 520 Hijra has written in his book, Ikhtisar, that Ja’far as-Sadiq (a.s.) started attending classes when he was ten years old. This report seems to be quite logical. Before that time he did not attend any classes. Muhammad al-Baqir (a.s.) taught him at home.

# Imam Muhammad al-Baqir (a.s.) and His Academy

Muhammad al-Baqir (a.s.) used to teach in the Mosque of Medina built by Prophet Muhammad (s.a.w.s.) and his companions when they emigrated from Mecca to Medina. It was expanded during the rule of his successors. He taught history, grammar, rijal (science of hadith narrators) and literature, which consisted of poetry only. In those days no attention was given to prose. It may be noted that there were no books of prose available in Arabic except those written by Ali ibn Abi Talib (a.s.) and Ali ibn Husain (a.s.).

Muhammad al-Baqir (a.s.) gave lectures without consulting books. His students also had no books, but had very strong memories and could memorize their lessons easily. Whatever they could not memorize they wrote down on a wooden board and copied the notes on paper carefully at home. They could not afford to use a lot of paper as it was a rare commodity those days. The advantage of writing on a wooden board was that it could be cleaned and used again.

Teaching without books may seem strange today, but in the past, teachers in the East and West always taught without books. Even today’s teachers who trust their memory teach their students without consulting books.

The subjects taught by Muhammad al-Baqir (a.s.) were not very vast. Only literature was a comprehensive subject. History consisted of what was in the Bible and the Holy Qur’an. Greek and Syrian books of history were not translated into Arabic and the history of Europe could not be taught. Ja’far as-Sadiq (a.s.), who had a very strong memory could memorize whatever was taught in the classroom.

Shias believe that Muhammad al-Baqir (a.s.) was called al-Baqir - meaning ‘one who splits and opens’, because he introduced many new chapters of knowledge. In our opinion he was known as al-Baqir because at the end of the first Century Hijra when Ja’far as-Sadiq (a.s.) was about seventeen or twenty years of age, he introduced geography and many other western sciences in his institute.

# Ja’far as-Sadiq (a.s.) In His Father’s Academy

When Ja’far as-Sadiq (a.s.) joined the college, his father had just started teaching Geography of Ptolemy. The day he attended his class, he heard, for the first time, the name of Almagest, the book on geography and astronomy written by Ptolemy, who lived in the second Century A.D. He also heard for the first time from his father that the earth was round.

Some people believe that it is because of Copernicus of Poland (1473-1543 A.D), that we know that the earth is a sphere. As a matter of fact all the learned people of ancient Egypt knew that the earth is a sphere.

There is a book in the library of the Vatican, which was written one thousand years before Copernicus born. In this book it is clearly mentioned that the earth is a sphere.

Before Copernicus had expounded his theory that the earth and planets rotate around the sun,[[13]](#footnote-13) Christopher Columbus had started his westward journey towards the island of spices knowing that the earth is round.

Before the theory of Copernicus was published Magellan of Portugal, who was in the service of the King of Spain, had sailed from Seville, a port of Spain, and went round the world. He himself was killed by the people of the Philippines but his companions returned to Spain after three years. This was the first time that it was definitely established that the earth is a sphere.

Ptolemy wrote in Almagest that the earth is the centre of the Universe and that the sun and planets go round it. But Copernicus stated that the sun is the centre of the solar system and the earth and other planets rotate around it.

In the year 91 A.H. two important events took place. The first was that a student of Muhammad al-Baqir (a.s.) while returning from Egypt, brought, as a present for him, a representation of the solar system which was made from sawdust. In Egypt, statues and many other fine objects were made from sawdust which was first turned into a kind of dough. Visitors to Egypt took them home as souvenirs. Outside of Egypt they were considered valuable items and were in great demand.

The representation of the solar system brought by Muhammad bin Fatah from Egypt consisted of a round disc or stand which represented the earth. On the disc was a globe, 48 clusters of stars or constellations, which were known to Ptolemy. The names of the constellations were written in Egyptian language. It was not Ptolemy but astronomers from other nations, who saw the figures of different objects in these haphazard groups of stars and gave them the names of these objects.

In the middle of the globe was belt of 12 groups of stars, from Aries to Pisces, representing the signs of the Zodiac. The sun, moon and the planets, which were believed to rotate round the earth, were also clearly shown on this globe.

Ja’far as-Sadiq (a.s.) was only 11 years of age when this representation of the heavenly bodies was brought to Medina from Egypt. The day he saw the globe he rejected the theory of Ptolemy. He said that when the sun, during its course round the earth, passes through the 12 constellations in one year and remains in each constellation for 30 days why it disappears from sight during the night. It should remain visible in each constellation for 30 days.

This was a very strong objection by a boy of 11 years of age. But without understanding the logic of it, Muhammad bin Fatah, who had brought the present from Egypt, replied, “Ptolemy says that the sun has two movements. One of its movements is that it crosses the sign of the zodiac and goes round the earth in one year and the other movement is that it goes round the earth in one night and one day, as a result of which we see it rise in the east and set in the west.

Ja’far al-Sadiq (a.s.) remarked that those two movements were not compatible. When the sun had to pass through the sign of the zodiac in one year and stay in each constellation for 30 days how could it change its course and go round the earth in 24 hours?

Muhammad bin Fatah said, “The sun leaves the belt of 12 constellations at night and rises in the east and sets in the west in order to create day and night.”

Ja’far as-Sadiq (a.s.) retorted, “It follows from what you say that only in the daytime the sun is in the sign of the zodiac. If this is the case why do we not see the sun at night?” Muhammad bin Fatah replied, “I do not know why we do not see the sun at night. Most probably it casts a thick veil one its face.”

Some people might say that it is not a strange thing that the people of Medina did not pay attention to what Ja’far as-Sadiq (a.s.) had said when in the 17th Century A.D. the people of England did not pay any attention to Newton’s discovery. But there is a vast difference between the two. The common people of England in the 17th Century A.D. were illiterate and to them a scientific discovery was of no significance, but the people, who attended the classes of Muhammad al-Baqir (a.s.) were learned people. They should not have behaved the way they did. They should have discussed the problem with Ja’far as-Sadiq (a.s.), accepted his arguments or rejected them by means of logic and reason, then tried to find out the case of the interchange of day and night themselves. The level of their intelligence and understanding was so low that they did not understand his objection and the strength of his arguments. They treated him like a child and ignored his objections.

It is a fact that after the age of seven, children become very inquisitive and want to know everything. Sometime they ask so many questions that their parents get irritated. If they do not receive satisfactory replies they go on asking questions. It can be said that because of his age, the objections of Ja’far as-Sadiq (a.s.) were not taken seriously. Anyway, it is doubtful that they would have been taken seriously even if a grown-up person raised them.

In the middle of the 15th Century A.D. Copernicus had said the same thing that Ja’far as-Sadiq (a.s.) had said in the 8th Century A.D., but no one accepted his views. He was fortunate that Poland, where he lived, was not under the jurisdiction of the Court of Inquisition when he published his theory of rotation of the earth and planets round the sun. This was the same organization which had forced Galileo to repent and beg for mercy for having said that the earth rotated round the sun. If he had been in Germany, France, Spain or Italy, he would have been arrested. At that time the Grand Inquisitor was a very cruel and narrow-minded person by the name of Torquemada. He extracted their confession by force and then punished them.

# Muhammad al-Baqir (a.s.) and Walid Bin Abdul Malik

In the year 91 A.H. a very important event took place. Walid bin Abdul Malik, the Umayyad caliph, came to Medina. He was travelling with the pomp and show of Byzantine emperors. Officials travelled ahead of the caliph to make arrangements for his stay and entertainment.

Omar bin Abdul Aziz, the governor of Medina, went 15 farsangs (one farsang is equal to 6.24 kilometers) out of the city to receive him. Before leaving Medina he had furnished and decorated the best house for the caliph’s stay. He had also made suitable arrangements for accommodation of those who were travelling with him.

The day the caliph entered Medina it was announced that he would hold a public reception and receives anyone who wished to see him.

Omar bin Abdul Aziz knew that Muhammad al-Baqir (a.s.) would not see Walid, because he did not recognize him as the rightful successor of the Prophet. He went to see Muhammad al-Baqir (a.s.) and asked him if he would see the caliph. The Imam replied that he would not see Walid.

Omar bin Abdul Aziz said, “This city is associated with you and your family and it is like your house. Walid is coming here as your guest. Whatever he is, he is a Muslim. You will surely see a guest who comes to your house, even if he is a non-believer.”

Muhammad al-Baqir (a.s.) replied, “The question of guest coming to my house is quite different from the coming of Walid to Medina. He has put on the robe of a caliph and is coming as the owner and master of Medina.”

Omar bin Abdul Aziz remarked, “I know why you do not want to see Walid. You are afraid that the people of Medina may think that you have sworn allegiance to him.”

“Yes,” replied Muhammad al-Baqir (a.s.).

Omar said, “One of your ancestors signed a peace treaty with an Umayyad caliph, though unwillingly, but for the good of the Muslims, but no one said that he had taken oath of fealty to him. If you see Walid no one can say anything.”

Replied Muhammad al-Baqir (a.s.), “I do not like to see him.”

Omar said, “Walid has a secret organization, which was established by Muawiyah. Every Umayyad caliph makes use of it for gathering information. He must have been informed that I have great love and respect for you and your family. If you do not see him he would think that my devotion to you has made you proud. He will surely remove me from the Governorship of Medina.”

Muhammad al-Baqir (a.s.) said, “I shall see him against my will. I do not want you to be in trouble for our sake.”

Omar asked, “Can I tell him that you will see him tomorrow?”

“Yes, you can”, replied Muhammad al-Baqir (a.s.).

When Muhammad al-Baqir (a.s.) arrived, Walid stood up to receive him. He seated him in front of him as if he was his equal in status. The Arabs paid great respect to the direct descendants of tribal chiefs. Muhammad al-Baqir (a.s.) was a direct descendant of the chief of the tribe of Bani Hashim. Besides, he was a great scholar. For that reason also Walid had to respect him. Most of the Umayyad caliphs were not interested in knowledge and learning, yet they always made a show of their love and respect for the learned people.

When two persons have nothing to discuss they talk about some trifling things, such as the weather, crops etc. Walid asked Muhammad al-Baqir (a.s.) about the condition of the harvest. In that year, there was heavy rainfall and the farmers hoped to reap a bumper crop.

Muhammad al-Baqir (a.s.) gave him a cursory reply.

Walid asked him about his personal property and how much it was worth.

Muhammad al-Baqir (a.s.) said that he had a small farm, the produce of which was enough for the needs of his family.

Walid said, “If you accept, I can offer to you a big estate inside the city of Medina or outside, wherever you like, so that you may enjoy it as long as you live and after your death it may pass on to your children.”

Muhammad al-Baqir (a.s.) replied, “My farm produces enough food, which is sufficient for our needs. As regards my children, they will work and earn their living themselves.”

After that short discussion Muhammad al-Baqir (a.s.) got up, bade farewell to Walid and left.

The main object of Walid to visit Medina was to see how his orders to expand the Mosque were being carried out. He saw and approved the work of expansion of the courtyard. Then he entered that part of the Mosque where Muhammad al-Baqir (a.s.) was holding his classes. His son, Ja’far as-Sadiq (a.s.) was also there.

When Muhammad al-Baqir (a.s.) saw Walid he stopped his lecture, the caliph requested him to continue. That day he was teaching geography and astronomy to his students. Walid had no knowledge of the subjects. He stood for some time and listened to his lecture and then he asked, “What are you teaching?”

“I am teaching geography and astronomy,” replied Muhammad al-Baqir (a.s.).

“What do you discuss in these subjects?” asked Walid.

“In these subjects, I teach my students about the earth, sun, moon and the stars,” replied Muhammad al-Baqir (a.s.).

When Walid saw Ja’far as-Sadiq (a.s.) in the class, he asked the Governor of Medina, “What is this small boy doing here?”

“He is the son of Muhammad al-Baqir (a.s.) and is one of his students,” replied Omar bin Abdul Aziz.

“What can this boy get out of these lectures?” remarked Walid.

“Do not judge him by his age. He is more learned than any of the students here,” replied Omar bin Abdul Aziz.

As desired by him Ja’far as-Sadiq (a.s.) went to Walid, who looked at him carefully and remarked, “He is still a child; how can he study in this class?”

“Test him and find out for yourself,” said Omar bin Abdul Aziz.

“What is your name?” asked the Caliph.

“My name is Ja’far,” replied Ja’far as-Sadiq (a.s.).

Walid asked, “Can you tell me who formulated the rules of Logic?”

“It was Aristotle. His students had given that name to him,” replied Ja’far as-Sadiq (a.s.) without any hesitation. The caliph than asked, “Can you tell me who was Sahib ul-Maz?” Ja’far as-Sadiq (a.s.) replied, “It is not the name of any person. It is the name of a group of stars called Orion.”

Walid, who was very surprised, asked Ja’far as-Sadiq (a.s.), “Do you know who was Sahib ul-Sawwak?”

“Abdullah bin Masud, who performed certain duties assigned to him by my grandfather, the Prophet of Allah (s.a.w.a.), was known by that name,” replied Ja’far as-Sadiq (a.s.).

Walid exclaimed, “Bravo, Bravo”, many times. Turning to Muhammad al-Baqir (a.s.) he remarked, “Your son will be a great scholar.”

Walid bin Abdul Malik was not wrong. Ja’far as-Sadiq (a.s.) emerged not only as a great scholar, but the greatest scholar of his time.

Sahib ibad, who died in the year 385 of the Hijra and was buried in Isphahan, has written that after Prophet Muhammad (May Allah bestow His Blessings upon him and his progeny) Islam did not produce a scholar greater than Ja’far as-Sadiq (a.s.).

# The System of Medicine of Ja’far As-Sadiq (a.s.)

We are not sure whether Muhammad al-Baqir (a.s.) taught medicine or not, but we know for certain that Ja’far as-Sadiq (a.s.) taught this subject in his Academy. His research and his theories had great impact on the science of Medicine. During the 2nd and 3rd Centuries of the Hijra most of the physicians in the East followed the methods of diagnosis and treatment prescribed by him. In cases where the condition of a patient was such that a physician could not know whether he was dead or alive, Ja’far as-Sadiq (a.s.) had suggested that a small incision should be made in his body, especially between his two fingers. If blood comes out it was a sign that he was alive.

Ja’far as-Sadiq (a.s.) made many discoveries in the field of medicine and formulated new methods of diagnosis and treatment. No one before him had done so much for advancement of the knowledge of medicine in the East.

By the word, “East”, we do not mean Arabian Peninsula. The Arabs had no knowledge of medicine before Islam. Among the ancient people only the Arabs made no contribution at all to the science of medicine. There were no physicians in Arabia. If someone fell sick, he was left without medical aid to recover by himself or to die.

The Arabs of the desert seldom fell sick. Their main food was camel’s milk, which provided all the necessary nourishment for the body without depositing harmful residues. Many chronic diseases of today, which result in a patient’s death, are due to harmful matter deposited in our bodies from the food we consume. Uric acid is one of them. Another factor, which contributed to good health and longevity of the people of the desert, was that they breathed fresh air.

The dwellers of the desert, however, suffered from the diseases of childhood caused by microbes, which resulted in large number of deaths ever year. Child sickness was so widespread and such a big killer that, as mentioned in “The Seven Pillars of Wisdom” by Lawrence of Arabia, the population of Arabia did not change much from the beginning of the Islamic Era till the end of the 18th Century. In some parts of Arabia the population actually declined although Islam had done a lot to increase the number of its followers.

The Arabs of the desert, who survived childhood diseases, had a long and healthy life. On the contrary, those who lived in the cities suffered from many ailments and remained at home without a doctor and without any medication.

The situation did not improve because there was no one in the whole of Arabia to teach medicine and produce physicians. So far as our knowledge goes, the first person who started teaching medicine was Muhammad al-Baqir or Ja’far as-Sadiq (a.s.).

Ja’far as-Sadiq (a.s.) was not a physician by profession so that he could have made those discoveries and formulated methods of diagnosis and treatment after practicing medicine. Did he learn them from his father? Did Muhammad al-Baqir (a.s.) teach him the science of medicine also? If so, the question remains to be solved as to who taught medicine to Muhammad al-Baqir (a.s.)?

# The Theory of Four Elements

One of the subjects taught by Muhammad al-Baqir (a.s.) was physics which included many subjects such as zoology, botany, geology, mechanics etc. In those days all of them were considered as parts of physics, but each of them is a separate subject today. If physics is the science which deals with material things, we must admit that Aristotle was right in treating them as parts of physics.

Ja’far as-Sadiq (a.s.) had learnt physics from his father. When he was only 11 years of age he had attacked the theory of the rotation of the sun around the earth. At the age of 12 he rejected the Theory of Four Elements of Aristotle and proved that it was wrong. Criticising the theory he said, “I wonder how a man like Aristotle could say that in the world there are only four elements-Earth, Water, Fire and Air.[[14]](#footnote-14) The earth is not an element. It contains many elements. Each metal, which is in the earth, is an element.”

From the time of Aristotle, Ja’far as-Sadiq (a.s.), that is, for a period of about one thousand years, the Theory of Four Elements remained the cornerstone of physics. No scholar expressed his doubts in its accuracy. Yet a boy of 12 years of age from Medina raised questions and proved that it was wrong.

When Ja’far as-Sadiq (a.s.) grew up and started teaching in his Institute, he proved that Water, Air and Fire were also not elements. One thousand and one hundred years before the scientists of Europe discovered that air was not an element and separated its constituents, Ja’far as-Sadiq (a.s.) said that air is not an element, but a mixture of many elements.

By sound judgement and reasoning it could be accepted that Earth is not an element, but it was not possible to believe that air is not an element. All eminent scientists after Aristotle, including the scientists of Europe of the 18th Century, which was the golden age of science, believed that air was an element. It was only after Lavoisier separated oxygen from the air and demonstrated the important role it plays in breathing and combustion that they accepted that it is not an element.[[15]](#footnote-15)

In 1794, Lavoisier, the father of modern chemistry, was beheaded by the sharp knife of the guillotine. Had he been allowed to live, he would have made many other important discoveries.

Ja’far as-Sadiq (a.s.) was one thousand and one hundred year ahead of his time when he discovered that air is not an element. Shias believe that he made those discoveries because he was an Imam and had Ilm Ladunni (divine knowledge).

Ja’far as-Sadiq (a.s.) has said that there are many elements in the air and that all of them are essential for breathing. After Lavoisier separated oxygen and demonstrated that this is the element in the air which supports life, scientists thought that other elements play no part in breathing. It was quite contrary to what Ja’far as-Sadiq (a.s.) had said. In the middle of the nineteenth Century scientists had to change their views about the part played by other elements in breathing.

By that time it was proved that although oxygen purifies blood it also burns combustible materials, which come in contact with it. If living beings breathe pure oxygen for a long time their breathing organs would be oxidized. Oxygen does not normally damage them because it is mixed other gases.

Presence of gases that are in very minute quantities in the air is also essential for breathing. Ozone, which has the same chemical properties as oxygen, plays a very important role in breathing. It fixes oxygen in the blood. Without the presence of ozone, oxygen cannot purify blood and will fail to perform its function.

Oxygen being the heaviest of all other gases in the air would have settled at the bottom and covered the surface of the earth up to a certain depth. As a result, breathing organs of all animals would have been burnt and animal life would have become extinct. Moreover it would have cut off the supply of carbon dioxide, which plants need so badly, and made it impossible for them to grow on the surface of the earth. Presence of other gases in the air does not let oxygen settles down to the bottom and destroy animals and plant life. At last, after more than one thousand years the theory of Ja’far as-Sadiq (a.s.) that presence of all gases in the air is essential for breathing was proved correct.

Today this theory of Ja’far as-Sadiq (a.s.) does not seem to be important, but in the 1st Century of the Hijra (8th Century A.D) it was a revolutionary idea to say that the air is not an element. In Eastern countries, including the city of Medina, which was the city of the Prophet, such ideas could be expressed freely. But up to the 18th Century such scientific ideas could not be expressed or tolerated in Europe. In the religion of Islam a Muslim cannot be accused of heresy if he said that the air is not an element, but the followers of many other religions believed in the purity of the air and water and considered them to be elements. It would tantamount to heresy if anyone of them said that the air was not an element.

Priestly was born in 1733 A.D and died in 1804 A.D.[[16]](#footnote-16) He discovered oxygen, but it was Lavoisier who found out its properties. It is said, although there is no proof, that Priestly gave the name of oxygen to this important gas. Oxygen is a Greek word composed of two syllables-oxy, meaning acidity and gen, meaning producer. Oxygen, therefore, means the producer of acidity.

The eminent scholar, Priestly, who cast off his clerical robe and came from the church to the laboratory, had made a great discovery. If he had not entered politics and continued his research, he would have discovered the properties of oxygen also. But politics removed him from laboratory work. He became a staunch supporter of the French Revolution. As a result, he was so hated in England that he had to immigrate to America where he wrote some books, but did not continue his research on oxygen.

Ja’far as-Sadiq (a.s.) was the first person to discover that oxygen produces acidity. We do not think that he had made that discovery when he was a student. Most probably he made that discovery when he had started his teaching career and had already discovered that oxygen is an element. He did not say himself that oxygen is a producer of acidity, but in the course of his lectures, he said that there are many elements in the air but only one of them brings about changes in different materials. It is the same element, which helps in combustion. Without the presence of this element in the air, combustion materials will not burn. He said that this element is so active and strong that if it is separated from air and produced in a pure form, it would burn even iron.

It has been proved by experiments that pure oxygen can burn iron, as was said by Ja’far as-Sadiq (a.s.). If we take a piece of red-hot iron and plunge it into pure oxygen, it will burn with a luminous flame. Just as in the old days people used to light a lamp by burning wicks in vegetable or kerosene, we can make our lamp by putting the wick of red-hot iron into liquid oxygen. This lamp will produce intense light and illuminate our house.

It is reported that once Muhammad al-Baqir (a.s.), father of Ja’far as-Sadiq (a.s.), said in his classroom that by using scientific methods we can produce fire from water, which extinguishes fire. This remained a riddle till the eighteenth Century when it was proved that by employing scientific methods, fire could be produced from water-a fire that is hotter than the fire produced by burning wood or charcoal. If hydrogen, which is a part of water, is burnt with the help of oxygen, which is another part of water, a flame of fire with a temperature of 667 degrees is produced. This process is called oxidation and is employed in welding and cutting metals.

There is no evidence that Muhammad al-Baqir (a.s.) had obtained hydrogen. There is also no proof that Ja’far as-Sadiq (a.s.) had obtained hydrogen or oxygen in pure form. But the experiments, which he had made, were not possible if he had not obtained oxygen in one form or the other. His following remarks are not his theories. They are the results he had obtained by making experiments with oxygen.

1. There is an element in the air, which is more essential for breathing, than others. It is actually the support of life.

2. It is the same element, which, in the course of time, and in most cases, by direct reaction, brings about changes in certain materials and putrefies them.

The words, “Direct Reaction”, must be kept in mind, in order to realize that the assessment and description on Ja’far as-Sadiq (a.s.) of the nature of oxygen was quite correct.

After Priestly and Lavoisier had discovered oxygen and found out its properties it was believed that it was only oxygen, which, in the course of time, reacts with foodstuff. That notion changed when Pasteur discovered microbes and proved that putrefaction of foodstuff, dead bodies of animals and many other things is caused by microbes and not by oxygen. But Pasteur must have realized that microbes cannot survive without oxygen. Therefore, what Ja’far as-Sadiq (a.s.) had said is correct that in most case it is the direct reaction of oxygen, which brings about changes and in some cases it is an indirect reaction.

Ja’far as-Sadiq (a.s.) had also said that the element, which supports life, is heavier than all other elements in the air. It was a very important discovery. The world had to wait for about one thousand years till Lavoisier proved that oxygen is so heavy that in nine kilograms of water, there are eight kilograms of oxygen, while hydrogen, which is twice the volume of oxygen, is only one kilogram.

Time did not allow Ja’far as-Sadiq (a.s.) to do further research on the element in the air which supports life and produces acidity. However, he was the pioneer and leader in the scientific study of oxygen.

It is reported that after the death of Ja’far as-Sadiq (a.s.) his students said that air or oxygen could be liquefied. This was a very old idea. Even before Aristotle it was believed that all gases could be liquefied, but there were no means available to do so.

Lavoisier himself could not liquefy oxygen because till the end of the eighteenth Century science and technology had not developed enough to enable him to do so. Moreover, he was not allowed to live long enough to continue his work.

For a long time after Lavoisier scientists believed that oxygen could not be liquefied. Finally technology developed to such an extent that it became possible to create very low temperatures, but in spite of that advancement in technology, it was not possible to liquefy oxygen in sufficient quantities so that it could be used in industry. It was only in the twentieth Century that technology to produce very low temperatures reached perfection. By producing a temperature of minus 1830 degrees Centigrade, oxygen was liquefied under ordinary air pressure. The temperature of minus 1830 degrees Centigrade is only 900 degrees above absolute zero, which is minus 2730 Centigrade. At this temperature the internal movement of matter comes to a standstill.

Many scientific ideas of today existed in old days also, but there were no means to make a practical use of them. Five hundred years before Christ, Democritus had enunciated the Theory of the Atom. He said that matter is made up of atoms and that there is a brisk movement inside the atoms.

If we forget, for the time being, the names of electrons, protons and neutrons, which were discovered in the twentieth Century, we will realize that he had given a correct description of an atom. However, no practical use of this knowledge could be made till the Germans tried to harness the power of atoms and use it in World War II. Finally the Americans entered the race and succeeded in exploding the first atomic bomb.

# Did Ja’far as-Sadiq (a.s.) Start the Renaisseance Movement?

The theories enunciated by Ja’far as-Sadiq (a.s.), after his study and research in the movement of the Earth and other heavenly bodies make him the father of the Renaissance movement at least in the field of astronomy, if not in other branches of science. By the Renaissance movement we mean the revival of knowledge in Europe, which started with the occupation of Constantinople by Sultan Muhammad, the conqueror.

It must be acknowledged that the Muslim world, from its very beginning, was more amenable to new scientific ideas than the people of Europe. Until 17th Century, Europeans could not tolerate any new scientific idea. Nothing was more repugnant to them than a new theory in the field of astronomy. There was no risk if someone said something about the earth, air or water, but if he said anything about heavenly bodies, which was against the traditional belief of the people, he was in danger of being declared a heretic and was sure to be imprisoned and killed.

Greeks and Romans in ancient times were also very sensitive to new ideas in astronomy, which were contrary to what they believed. When Anaxagoras, the teacher of Socrates, wanted to introduce Iranian astronomy in Greece, he was declared a traitor and deported from the country.

Anaxagoras actually wanted to introduce the Persian calendar. In that Calendar a year had 365 days plus a fraction of a day. Before Iranians had made their calendar, it was known that there were 365 days and a fraction of a day in each year. We have historical evidence to show that it was known to Egyptians about 2,000 years before the birth of Christ. It is not known whether the Babylonians had this information or not. Some knowledgeable persons are of the opinion that ancient people learnt astronomy and other sciences from a very advanced and learned people, who according to Plato, were destroyed in a natural calamity.

Most people were against new ideas in astronomy because they saw the movements of the sun, moon and the stars with their own eyes. They did not believe what was against their own observation. However, they tolerated new ideas about the things which they did not see themselves. Different views were expressed in ancient times whether the world came before the movement or the movement before the world. It was also disputed whether the soul was born before the body or the body before the soul, but no one was accused of heresy for holding an opinion on such matters.

In the 2nd Century of the Hijra it was only in the Muslim countries that people had the freedom to say and write anything about heavenly bodies. That is why Ja’far as-Sadiq (a.s.) could propound new theories about the sun, moon and planetary bodies. Because he was in a Muslim country, no one accused him of heresy when he said that the earth rotates on its own axis which causes interchange of day and night.

# Rotation of the Earth on its Axis

Vasco de Gama, who discovered the route to India, Columbus who discovered America and Magellan, who tried to go around the world, had not undertaken their journeys to make discoveries. They had material benefits in mind. They knew that the earth is round, but there is nothing to show that they also knew that it rotates on its own axis.

When such a great scholar like Poincare (died 1912), who lived in the 20th Century refused to believe that the earth rotates on its axis, how could the people who lived in he 1st and 2nd Centuries of the Hijra believe in the theory of Ja’far as-Sadiq (a.s.) that the earth rotates on its own axis.

Tycho Brahe, who died in the year 1701, belonged to a Noble family of Denmark. Unlike Kepler of Germany, who was a pauper, Tycho was very rich and used to throw big parties. He had a vast knowledge of astronomy. Without his help, Kepler could not have discovered his three famous Laws of Planetary Motion. Tycho had discovered that the earth rotates round the sun. He could publish his theory because no branch of the Organization of Inquisition existed in Denmark, a Protestant kingdom. In spite of his vast knowledge and extraordinary intelligence he was unable to discover the earth’s rotation on its own axis.[[17]](#footnote-17)

The rotation of the earth on its own axis could be proved by observation only. When astronauts landed on the surface of the moon, and directed their telescopes towards the earth they observed that it was rotating slowly on its axis. In the beginning even space travellers could not see with their own eyes rotation of the earth on its axis, since they had no fixed station. They were travelling in their spacecrafts and going round the earth every ninety minutes or so. At that high speed it was not possible to observe the motion of the earth.

There is no star in our galaxy which does not rotate around itself. All of them follow the laws of mechanics which govern the movement of heavenly bodes. Our own sun also rotates on its axis and completes one rotation in 25 days. The laws that govern the rotation of stars makes our spaceships also spin in space.

When Ja’far as-Sadiq (a.s.) made that discovery did he know the Laws of Mechanics of the stars and did he know that when two forces work on an object in such a way that one force pushes it away from the centre and the other force pulls it towards the centre it starts to spin? He definitely knew about these laws when he said that the earth rotates on its own axis, which produces day and night. Without the knowledge of these laws it would have been impossible for him to make that discovery.

# Theory of the Origin of the Universe

Some people might say that it was only by guesswork that Ja’far as-Sadiq (a.s.) said that the earth rotates on its own axis. But the question arises as to why no one else had guessed that for such a long time. This proves that he knew the laws of astrophysics, which enabled him to make that discovery. If he had not known those laws, it would have been impossible for him to discover the rotation of the earth on its axis. This discovery could not have been accidental. One must know the cause to know the effect. Ja’far as-Sadiq (a.s.) did not say what led him to come to that conclusion, but what he has said in respect to many other problems of physics, are exactly according to modern theories of science.

His other wonderful theory is about the origin of the Universe. When scientists read this theory they confirm that it totally agrees with the modern theory, which has not yet become a law of physics. It may be right; it may be wrong. The theory of Ja’far as-Sadiq (a.s.) is also in the same category. It cannot be called a law of physics. However, it has the unique distinction that it was enunciated 12 Centuries ago, but it agrees with our modern theory. It reads as follows:

“The Universe was born out of a tiny particle, which had two opposite poles. That particle produced an atom. In this way matter came into being. Then the matter diversified. The diversification was caused by the density or rarity of the atoms.”

In the above theory two opposite poles are two negative and positive charges of an atom. The two charges were the cause of the creation of the atom. The atom produced matter. Varieties in matter are due to the presence of more or less atoms.

When Ja’far as-Sadiq (a.s.) was asked as to when the Universe came into being, he replied, “No, I cannot tell you the date of birth of the Universe”, he replied.

Shias believe that Ja’far as-Sadiq (a.s.), who was an Holy Imam had unlimited knowledge, and knew the date of birth of the Universe, but he did not want to tell anyone. He remained silent not only in that case but in many other cases as well. Whenever he thought that it was not in our interest to know some of the secrets of Almighty Allah, he remained silent.

# Theory of Opacity and Transparency of Materials

Ja’far as-Sadiq (a.s.) made many discoveries in physics which no one had even dreamt of before him and no one could think of after him. One of the laws worked out by him is about opacity and transparency of materials. He said that materials which are solid and absorbent are opaque, and materials which are solid and repellent are more or less transparent. When he was asked about the thing which is absorbed by an opaque material he replied, “HEAT.”

Today this theory is one of the Laws of Physics. How wonderful it is that in the 2nd Century A.H. (7th Century A.D.) he could enunciate such a new and unique theory.

If we put the question to one hundred persons today as to why one substance is opaque and the other transparent, not even one of them will give the correct answer. According to the law of physics anything which conducts heat, electricity and magnetic waves is opaque, but those things which are poor conductors of heat, electricity and magnetic waves are transparent.

His discoveries were not confined to the field of science only. He made great contributions to other branches of knowledge as well. We shall discuss some of them in the next chapter.

# Living Beings in Other Worlds

His other interesting theory is that there are living beings in other worlds, who by their advanced knowledge might be trying to contact us. Since we do not know them nor understand their language, we do not realize that they want to get in touch with us and talk to us.

No one before him had said anything about the presence of living beings in other worlds, who might be trying to contact us and no one for Centuries after him said a word in this connection. It was in the 19th Century that Camille Flammarion of France raised this issue and presented his theory about the possibility of establishing contacts with unknown beings of the other worlds. However, he could not test his theory, since technology had not advanced sufficiently at that time and he had no means of communication at his disposal.

In the year 1920, Marconi of Italy, who was the first to make practical use of wireless technology, stated in a meeting of the officers of Italian Navy that in the wireless station on his ship, he received radio waves, which, without a shadow of doubt, were being sent to the people of the Earth by some intelligent, educated and technologically advanced beings.[[18]](#footnote-18) Marconi could not extend the horizon of his experiments. The telescope at his disposal was very weak and he could not see through it anything beyond our solar system. At that time radio telescopes were not invented and the 5 meter thick lens of the Palomar Observatory had not been manufactured through which Astronomers can see galaxies which are at a distance of two thousand million light years from our earth. Even after construction of the big telescope we have not been able, so far, to establish any contact with the unknown beings of the other worlds.

# Composition of the Human Body

Just like any other Muslim, Ja’far as-Sadiq (a.s.) also believed that human beings were made from the earth, but no one could dream either during his lifetime or after his death of what he has said about the composition of the human body. If anyone has said anything in this connection he must have heard it from him or from one of his students.

He said that whatever is in the earth is also in the human body, but of all elements four are in very large quantities, eight elements in small quantities and eight elements in minute quantities.

Henry Bergson, the French philosopher, said that every atom, which exists from the time of the creation of the world or the Universe, has knowledge of everything that exists on the surface of earth. Just like the atoms, every cell of the human body knows what is in the world. It also knows the history of mankind from the beginning of the world till today. Gaining access to the boundless field of the subconscious mind has been called by him as “The Leap of Life.” He said that the Leap of Life of a genius is much higher than that of an ordinary person. He can make use of the knowledge which lies in the human cells.

Ja’far as-Sadiq (a.s.) was either endowed with divine knowledge of the Imamate, as Shias believe, or his subconscious mind was linked to his conscious mind, as some people think, or else his “Leap of Life” was very big, as Bergson has said. Whatever may be the case, he was the only person among his contemporaries as well as those, who came after him, who had knowledge of the human body.

Twelve and a half Centuries after his death his theory is confirmed today by science and there remains no doubt about its soundness and accuracy. What he did not do was to mention the names of elements which are present in the human body.

There are 102 elements in the earth and all of them are present in the human body. Some of them are in such small quantities that it has not been possible to discover their exact proportion.

His statement that what is in the earth is in the human body is not important and proves nothing. Anyone who believes that man was made from the earth must also believe in that. What proves that he was a genius is his theory that out of all the elements which are in the human body four elements are in large quantities, eight in small quantities and another eight in very minute quantities.

The above theory has been proved to be quite correct. The four elements, which are in large quantities in the human body, are Oxygen, Carbon, Hydrogen and Nitrogen. The eight elements which are in small quantities are: Magnesium, Sodium, Potassium, Calcium, Phosphorus, Sulphur, Iron and Chlorine. The other eight elements which are in very minute quantities are: Molybdenum, Cobalt, Manganese, Copper, Zinc, Fluorine, Silicon and Iodine.

# Discovery of Hydrogen

In his academy many new subjects were taught which had never been taught before. Since the books on those subjects were not available in Arabic, it became necessary to translate them into Arabic so that all students could benefit from them.

For teaching physics, chemistry and other science subjects there was a laboratory attached to his institute. It was a very small laboratory, but it was sufficient for the needs of his students.

It was not a miracle of Ja’far as-Sadiq (a.s.) that he moved the mountain which no logical mind would believe, but his greatest miracle was that twelve and a half Centuries ago he discovered the presence of oxygen in the air.

His father, Muhammad al-Baqir (a.s.), who was also a great scholar, had discovered the presence of hydrogen in water. He had also found out that it was a highly inflammable gas. That is why he said that water could be turned into fire. Ja’far as-Sadiq (a.s.) must have known about the presence of hydrogen in water through his father, but he himself discovered the presence of oxygen in the air.

We do not know if Ja’far as-Sadiq (a.s.) was able to obtain pure oxygen and hydrogen or not. The discovery of these two gases depended upon their separation from air and water. Separation of hydrogen from water was more difficult than separation of oxygen from air. Pure oxygen is available in the air, but pure hydrogen is not available anywhere. That is why hydrogen could not be obtained till sufficient power was developed and water was hydrolyzed.

We are surprised how Ja’far as-Sadiq (a.s.) and his father were able to discover hydrogen, which is a colourless, odourless and tasteless gas and does not exist freely in nature. They could not have identified this gas and found out its properties without separating it from water through the process of hydrolysis, which was impossible without a strong current of electricity.

The first person who was able to separate hydrogen from water in modern times was the English scientist Henry Cavendish, who died in 1810 at the age of 81.[[19]](#footnote-19) After working hard for many years he was able to hydrolyze water and obtain hydrogen. On May 27, 1766 he placed a burning stick near a container full of hydrogen. Instantly it caught fire. The container exploded and fire spread everywhere. If members of his household had not rushed to his rescue, the whole house and its contents would have been burnt. He escaped with some injuries to his hands and his face. Through that bitter experience, Cavendish learnt that hydrogen is highly inflammable.

It was a general belief that water was nothing but liquid air because it evaporated in heat and became part of the air. Then it came down again in the form of rain.

Cavendish, through his experiments, proved that it was not liquid air, although he himself called hydrogen “Inflammable air.” It was Lavoisier, the French chemist, who gave the name of hydrogen to this gas.

In the time of Ja’far as-Sadiq (a.s.) electricity was not available. Had he and his father employed some other means, which modern scientists do not know, for separating hydrogen gas from water without the use of electricity? This great discovery was not possible through philosophical speculations and guesswork.

The pollution of air arising from excessive use of fossil fuel for producing energy has caused Americans to consider using hydrogen as an alternative source of energy. But the problem of separating it from water without the use of electric current has not been solved yet.

# Theory of Light

The greatest achievement of Ja’far as-Sadiq (a.s.) was his Theory of Light. He said that light reflected by different objects comes to us, but only a part of the rays enter our eyes. That is why we do not see distant objects clearly. If all the rays of light that come from them entered our eyes, objects would appear near to us. If we make a device through which all the rays of light coming from the camels grazing at a distance of 3,000 zirah (one zirah is equal to 40 inches) entered our eyes we would see them grazing at a distance of only 60 zirah and all other objects would look 50 times nearer to us.

It was this theory, which helped Lippershey of Flanker’s to make his first field glasses or binoculars in 1608. Galileo made use of these binoculars and invented his telescope on the 7th of January, 1610.[[20]](#footnote-20) When he directed his telescope towards the moon he was surprised to see that it has mountains, plains and valleys just as we have on the surface of the earth. It was at that time that he realized that earth was not the only world. The moon was also a world.

The period between the invention of the binoculars and the telescope was less than two years. Most probably the idea of making the binoculars and telescope entered the minds of Lippershey and Galileo at the same time, but it cannot be denied that Galileo leant a lot from the invention of Lippershey. He examined the binoculars, removed the defects which could possibly be removed at that time and made his telescope.

Galileo had studied in the University of Padua, Italy. After he completed his education he was appointed Professor of mathematics in the same university.

If Ja’far as-Sadiq (a.s.) had not formulated his theory of light, binoculars and telescopes would not have been invented and made and Galileo could not have confirmed through visual observation the theories of Copernicus and Kepler that all planets including the earth, rotate around the sun.

The invention of telescope created so much excitement among the people of Italy that the President of the Republic and the senators became interested to see the solar system through it. Galileo took his telescope from the University of Padua to Venice and installed it on the steeple of a church. Aged senators, assisted by others, climbed the tower to observe the planets and stars.

When Galileo was asked why his telescope made heavenly bodies seem so near that they could see the mountains of the moon, he repeated the words of Ja’far as-Sadiq (a.s.) and said, “This telescope collects all the rays of light coming from the heavenly bodes. When all the rays are concentrated, the objects which are at a distance of 3,000 feet away appear to us as if they were at a distance of only 60 feet.”

In the time of Ja’far as-Sadiq (a.s.), industry had made no progress to enable him to make a telescope and observe heavenly bodies himself. Nevertheless it does not, in any way, reduce the importance of his theory. Could Newton, who discovered the laws of gravitation, send the apple which had fallen on the ground back to the sky and make it go round the earth?

The satellites which go to the moon, Venus and Mercury obey the laws of gravitation discovered by Newton, but he himself could not send any satellite to the planets.

Before the time of Ja’far as-Sadiq (a.s.) it was believed that light from our eyes falls upon different objects so that they could be seen. He was the first scholar who rejected that idea and said, “The rays of light from different objects come to our eyes and enable us to see them. The rays of light from our eyes do not go out and fall on other objects; otherwise we could have seen them in the darkness also. We see only those objects which are luminous. If they are not luminous themselves, they must reflect the light falling upon them from some luminous objects.”

He also put forward a very interesting theory about the speed of light. He has said that light is a kind of motion which is very fast. Since no technical aids were available he could not measure the speed of light, but what he said is quite in harmony with the modern theory of light.

It is reported that once, during the course of his lectures he said that a powerful beam of light cold move heavy objects. The light which Moses saw at Mount Sinai was of that kind. It could have moved the mountain if God had so desired. It can be said that by making the above statement he laid the foundation of the theory of the laser.

The theory that a strong beam of light can move heavy objects was also mentioned in the past but the following theories are his own,

(a) Rays of light are reflected by different objects and enter our eyes.

(b) We do not see distant objects clearly because the rays of light coming towards us are scattered.

(c) If the rays of light are concentrated by some device we can see distant objects distinctly.

(d) Light is a kind of motion which travels as a very high speed.

(e) A strong beam of light can move heavy objects.

From time immemorial it was supposed that light could move heavy objects. In ancient Egypt it was believed that a very strong beam of light could pass through a mountain and even move it from its place. This view was shared by the followers of other ancient religions as well, but they did not explain how light could do that. Since sorcery and magic were parts of ancient religions they might have thought that light could do that by magic.

What Ja’far as-Sadiq (a.s.) did not say about light is that it is a kind of energy otherwise there is no difference between his theory and the modern theory of light. He was definitely a leader and a pioneer in this field as well. He has said that light travels very fast. The speed of light has been measured to be 300,000 kilometers per second. It was very great speed by ancient standards, but is not considered as such today. A distance of 300,000 kilometers is a very short distance as compared to the astronomical distances between stars and galaxies.

# Time and Space

Time, Ja’far as-Sadiq (a.s.) has said, is the distance between two known events. It has no independent existence. It is only we, who feel that it exists.

Time is a very old subject, which was discussed by Greek philosophers, who believed in the physical existence of time have said that it is composed of very small particles. Those particles were so small that they could not be seen or touched. They were always on the move. They came from one side and went to the other. No one could feel their movement, but the changes made by their movement were noticeable in all the plants and animals.

They said that time was of two kinds. There was one type in which particles moved and passed away, making changes in plants, animals and humans. There was another kind of time whose particles did not move. They were just like the particles of sand and dust, which had settled down at the bottom of a pit and remained motionless. That motionless and stationary time was known as eternity.

In later periods also many philosophers refused to believe in the physical existence of time, but they did believe in the existence of space.

We must pay homage to Ja’far as-Sadiq (a.s.), peace be upon him, who said 1,200 years ago that space has no physical and independent existence and is also subject to change. To a little boy the courtyard of his small house would seem quite big. However, if he leaves the house and comes back after an absence of 20 years, the same courtyard would look very small. He would wonder why the courtyard, which was so big, has become so small.

How wonderful it is that his theories of time and space correspond exactly to the modern theories of physics, although they have not been expressed in the scientific terminology of today.

# Transfer of Disease by Rays

Ja’far as-Sadiq (a.s.) has said that patients suffering from certain diseases emit special types of rays. If these rays fall upon a healthy person, they are apt to make him sick.

The above theory was not acceptable to physicians and biologists. They were of the opinion that microbes and viruses were the main cause of many diseases, which were spread by insects, air, water, food and direct and indirect contact with patients.

Before it was discovered that many diseases are caused by microbes and viruses and spread by insects, water, food etc. it was believed that diseases were spread by means of smell, which comes out of the sick person and steps were taken to prevent the spread of diseases through smell.

No one before Ja’far as-Sadiq (a.s.), had ever said that diseases were also transferred from one person to other by means of rays, emitted from patients suffering from certain diseases. This idea was rather ridiculed by the learned people till it was proved to be correct by scientific studies.

In Novosibirsk, Russia, which is a centre of research for medicine, chemistry and biology, numerous experiments were conducted and it was established that:

(a) The cells of a sick person emit many kinds of rays.

(b) If a healthy person is exposed to the rays which come out of patients suffering from certain diseases, he may contract the disease, even if there has been no physical contact between the two.

Russian scientists took cells from different organs of a healthy person and divided them into two parts. They put one part of the cells in a jar of quartz, which shielded them from all kind of rays, except ultraviolet rays, and the other part in a jar of glass which ultraviolet rays cannot penetrate. These jars were put near another jar, which contained sick cells. After a few hours it was noticed that the healthy cells, which were in the jar of quartz, had also become sick, but the cells which were in the glass jar were not affected at all.

Five thousand experiments were conducted during a period of 20 years and each time the result was the same. Healthy cells were infected by the emission of ultraviolet rays from the sick cells and the sickness was, in all cases, the same as what the sick cells were suffering from. For instance, if the sick cells had toxemia, the rays coming from them transferred toxemia to healthy cells.

During experiments it was also observed that when sick cells were treated with antibiotics, the intensity of ultraviolet rays, emitted from those cells, was greatly reduced and they had no adverse effect on healthy cells placed near them.

The above experiments conclusively prove that cells of living beings are transmitters and receivers of ultraviolet rays and that certain diseases are spread by radiation from sick cells as Ja’far as-Sadiq (a.s.) had said.

Those experiments proved to be very useful. The scientists and biologists learnt that if ultraviolet rays emitted by the cells of a sick person, are not allowed to fall on healthy persons, the spread of certain kinds of diseases can be controlled.

Russian scientists are collecting data of different kinds of rays emitted from persons suffering from various diseases and the intensity of photons of ultraviolet rays emitted by them. They say that it would help them in treating patients and controlling the spread of diseases. However, they do not say how it would help them in the treatment of patients.

Some experiments in this field were conducted in America also with the same results. The American scholar, who has done research on the subject and published results of his experiments in the form of a book, is Dr. John Oats.

The ill effects of ultraviolet rays on living tissues are well known. Ultraviolet rays, which radiate from the sun, would destroy all living creatures on the surface of the earth, if they are not protected by a thick layer of air.

Our knowledge about living cells and viruses is very scanty. We know only that viruses are extremely small beings and that they enter our cells. We also know that some medicines help us in our fight against viruses. However, we do not know how they enter the living cells. We also do not know why our cells become weak and old. If we know, we will fight against old age and remain young.

Russian and American scientists have discovered that sickness is transferred from sick cells to healthy cells by means of ultraviolet rays, but they still do not know how. So long as this remains a mystery, it cannot be said with certainty that the sudden outbreak of disease in some areas was due to radiation of ultraviolet rays.

# Matter and Anti-Matter

One of the theories of Ja’far as-Sadiq (a.s.) is that everything, except Almighty Allah, has its opposite, but this does not result in a conflict, otherwise the whole Universe would be destroyed.

This is the theory of matter and anti-matter, which has been discussed briefly before and will be discussed in some detail in this chapter.

The difference between matter and anti-matter is that in matter the electrons are negatively charged and protons are positively charged. But in anti-matter the electrons are positively charged and protons are negatively charged.

Scientists are of the opinion that if one kilogram of matter collides with one kilogram of anti-matter so much energy will be released that the whole world will be destroyed. But no one has so far conducted an experiment to find out what would actually happen if matter collides with anti-matter.

Before Americans exploded the first atomic bomb in 1944 it was believed that if an atomic bomb is exploded it would create such a chain reaction that all atoms of the world would disintegrate and it would be destroyed, but nothing happened and the pundits, who had made that prediction were proved wrong.

Scientists, however, argue that there is a difference between the explosion of an atomic bomb and one due to the collision of matter and anti-matter. When an atomic bomb or a hydrogen bomb explodes, part of matter is converted into energy. Only nineteen parts per thousand of matter of the atomic bomb, dropped on Hiroshima was converted into energy and the rest had gone to waste.

The countries that have exploded hydrogen bombs have kept details of their experiments as military secrets. We, therefore, do not know how much matter of a hydrogen bomb is converted into energy, but it can be said with certainty that no one has so far been able to convert 100% of matter of any kind of bomb into energy.

Professor Hans Olof Costa, an eminent astrophysicist from Sweden, does not think that explosion of matter and anti-matter can destroy the world. In his opinion our future source of energy is not, atomic power, nor is it hydrogen from rivers and oceans, but it lies in the explosion of matter and anti-matter. He says that 50 kilograms of matter and an equal amount of anti-matter are quite sufficient to supply the energy needs of the entire world for one year. He calls this kind of energy, Matergy.

Professor Alfven thinks that if half a kilogram of matter is exploded with half a kilogram of anti-matter it would create one hundred billion degrees centigrade of heat, which is much more than the heat in the heart of the sun. It is estimated by astrophysicists that the heat in the centre of the sun is about 10 million degrees centigrade.

The question arises as to how human beings can harness such tremendous amount of heat and use if for their needs. Professor Alfven does not consider it a big problem. He says that the production of heat can be controlled and reduced to a manageable level by having an imperfect explosion just like an atomic explosion in which only a part of the matter is converted into energy.

According to Professor Alfven exploding matter with anti-matter and producing energy is not a scientific problem, but it is an economic problem. A sum of ten to fifteen billion dollars is required to conduct experiments and explode matter with anti-matter. No country in the world is ready to spend so much money on such experiments.

Just as uranium was used for exploding an atomic bomb, helium would be used for exploding matter with anti-matter. Russian scientists have already obtained anti-matter of helium.[[21]](#footnote-21)

# Light of the Stars

Ja’far as-Sadiq (a.s.) has said that among the clusters of stars, which we see at night, some are so bright that our sun, in comparison, is quite insignificant.

Because of man’s limited knowledge about stars, many people during his time and Centuries after him, considered this theory to be illogical, irrational and unacceptable. They could not believe that these small specks of light, which are called stars, can have more light than the light of our big bright sun.

About twelve and a half Centuries after the death of that great man it was proved that what he had said was quite correct. It has been discovered that there are stars in the Universe, which are billions of times brighter than the sun. They are called quasars. The light of quasars is about quadrillion times (ten thousand billion times) the light of our sun. Some of them are at a distance of about nine thousand million light years from the earth.

The first quasar was discovered in the year 1927. About 200 quasars have been discovered so far. Astronomers need very powerful telescopes to study these wonderful stars. The world’s largest telescopes are not considered powerful enough for studying quasars.

Astronomers of the 19th and 20th Centuries were not surprised when they discovered giant stars, but when they observed quasars with their telescope they held their heads with their hands lest they might lose their senses and go crazy.

The discovery of quasars disproved the theory of Einstein that the diameter of the Universe is about three billion light years.

The distance of nine billion light years is a very great distance and makes one stagger to imagine the vastness of the Universe. Light covers a distance of 9,800 billion kilometers per year. We have to multiply this figure with nine billion to find out the distance between the earth and quasars.

What has confused and puzzled scientists is the light of quasars. They fail to understand the cause of the power or energy within them which produces such an intense and bright light.

Professor Alfven is of the opinion that there is no other source in the Universe, which can generate so much energy in quasars, except explosion of matter and anti-matter.

If the Russian scientists conduct an experiment and explode helium with anti-helium, mankind would not only have an inexhaustible source of energy, it would most probably solve the mystery of how so much light is produced in quasars.

# Multitudinous Worlds

Another important theory of Ja’far as-Sadiq (a.s.) is that there are so many worlds that we cannot count them. Their number is only in the knowledge of Allah (s.w.t.).

He has classified them into big worlds and small worlds. He has said that the difference between them lies in their size only. Whatever is in big worlds is also in small worlds, but on a smaller scale. And whatever is in small worlds is also in big worlds, but on a larger scale. If we had the power, we could make small worlds big and big worlds small.

These ideas are confirmed by physics. If vast distance between the nuclei and electrons of atoms are removed, the earth would shrink to the size of a football, but weight would remain the same. It would not be out of place to mention that all celestial bodies, including our earth, which rotate round the sun, have no weight in space.

Radio telescopes not only scan the waves of light, which come from distant stars, they also search vast and limitless space for the presence of molecules. About thirty kinds of molecules have been discovered so far. Some of them are the building blocks of amino acids and proteins, which are principal components of cells of all living organisms. The presence of these molecules in outer space is a sure sign that life on this planet is not an exception, but it is widely spread throughout the Universe.

It can be said with confidence that basic elements of life have always been coming to the earth from outer space. They were destroyed when the earth was hot and molten, but after it cooled down gradually and conditions become favourable, these molecules produced amino acids, protein, etc., which created the cell of living organisms including human beings.

Just as we have living beings on this planet, there must be living beings on many other planets in the Universe where conditions are suitable. It is also possible that inhabitants of some of the planets might have been there for millions of years before we came into being and have solved all the problems which confront us today.

We hope that someday we will be able to establish contact with the intelligent and sociable beings of other worlds through radio telescopes and make use of their knowledge and experience.

Archimedes, the Greek geometrician and philosopher, who lived three thousand years before Christ, considered an atom to be indivisible. He said that if someone wanted to find out the number of atoms in the Universe he should multiply 63 times 10 by 10. Today we find that the number of suns in the Universe is more than the number of atoms, as he had calculated.

Eddington[[22]](#footnote-22) (Sir Arthur Stanley), the English physicist, who died in 1944, has said that if we want to find out the number of atoms in the Universe we should multiply 83 times 10 by 10. When he had calculated the number of atoms in the Universe by his mathematical formula, radio telescopes were not invented and the great telescope of Mount Palomar Observatory in the United States, which enables astronomers to probe the Universe up to a distance of two thousand million light years, had not yet been constructed. It was the belief of astronomers at that time that there were only one million galaxies in the Universe.

In the eyes of Eddington and other scientists of the 19th Century the Universe was very small. The Universe of their imagination, as compared to the real Universe, was just like a cup of water before a boundless and fathomless ocean. If Eddignton was alive today and had seen quasars through radio telescopes he would have definitely changed his views.

After the discovery of quasars, astronomers have come to the conclusion that one hundred million galaxies and billions of stars in each galaxy, which we see through our telescopes, are not within the boundaries of the real Universe. They are only a few celestial objects scattered in the outskirts. The real Universe begins from quasars, which are at a distance of about nine billion light years from us. They argue that if the boundaries of the real Universe had not begun from there, quasars would not have ten thousand billion times the light of our sun. Our sun is nothing compared to quasars. It converts only four hundred billion tons of hydrogen into helium every 24 hours. It would continue to do so and give light and heat to us and to other planets for another ten billion years. But in 24 hours a quasar converts ten thousand billion times the amount of hydrogen converted by our sun.

Our telescopes are not powerful enough to enable us to see what is beyond quasars. Therefore, we do not know how vast the Universe is. It can only be surmised that in the Universe there would be millions of millions of worlds, which have existed for billions of years and shall continue to do so for billions of years to come.

We must, therefore, accept, as Ja’far as-Sadiq (a.s.) has said, that no one, except Allah (s.w.t.), knows the number of large and small worlds. In other words we, the humans, do not know them and cannot count them.

# Expanding and Contracting Universe

A very interesting theory of Ja’far as-Sadiq (a.s.) is that the Universe is not always in one and the same condition. In one period it expands and in another it contracts.

The phenomenon was considered for Centuries as inconceivable and the theory remained quite incomprehensible to the leading astronomers.

After the 18th Century, more and more powerful telescopes were built and astronomers could see beyond our solar system. They could also discover the components of stars by studying spectrums of their light.

It was in the beginning of the 20th Century that Abbe Lemaitre, who was a priest and at the same time a Professor at the University of Belgium, noticed that many galaxies, which are close to our solar system and could be observed clearly, are gradually receding and scattering in different directions.

He communicated his observations to other astronomers, who were working in different observatories in the world and asked them to check whether he was correct or not. Confirmation was received from many observatories of Europe and America that Lemaitre was correct and that many galaxies, which are close to our solar system, are moving away from our galaxy and the distance between them are gradually increasing.

When World War II broke our, all connections between astronomers who were interested in the study of this strange phenomenon were severed. With the deaths of Lemaitre and Eddignton, the English physicist, further research in this field was suspended.

At the end of 1960 research work on the subject resumed. It was observed and confirmed by all astronomers that distance between our galaxy and the neighbouring galaxies are increasing. We cannot check and confirm whether it is happening to other galaxies as well. They are so far from us that we cannot observe them clearly through our present telescopes. However, these observations have provided sufficient proof that the Universe is in a state of expansion.

Hundreds of years after the death of Ja’far as-Sadiq (a.s.) a part of his theory that the Universe sometimes expands was definitely proved to be correct. We do not know when this expansion started. It must have begun thousands of years before he was born. The Universe was actually in a state of expansion when he said that it sometimes expands and sometimes contracts.

The discovery of black holes has proved his other statement that the Universe sometimes contracts. No one can imagine how much time these stars must have taken to condense and contract. It is real death of matter when it has no movement at all. Is it the fate and destiny of matter that it may finally die and become a black hole with such a deadly pulling force that even light waves cannot escape its death trap? Just as expansion of the Universe is gradual, the contraction is also gradual. These stars have not collapsed and lost their identity overnight. Stars lost electrons and their nuclei adhered together over millions of years.

Every time the world wakes up and starts moving and expanding it produces better and better plants, animals and human beings. The dirty, the deceased and the decadent are discarded and destroyed and they never wake up and return. At the end of that period the earth starts shrinking and receding to its centre. Animals and plants start dying and disappearing till there is no trace of them at all. This is the period of sleep, rest and contraction. No one knows how long it lasts.

However, the soul of man does not die during the period of sleep and rest. It continues to improve and proceed from one state to another. Each time the earth wakes up, better and better human beings are born till they become perfect, go to paradise and attain eternal bliss.

# Pollution of Environment

Ja’far as-Sadiq (a.s.) has said that we should not pollute environment otherwise it would become impossible to live on this planet.

Definitely he had our times in mind when he made those remarks. Pollution was not a problem in his time. There was not a single factory in existence and metals were smelted in small furnaces by burning wood.

It was during the 18th Century that England, France and Germany started producing iron and steel in large quantities and chimneys of factory and furnaces began spewing smoke twenty four hours a day.

The environment is so polluted in Europe and North America due to industrial expansion that marine life in the river Rhine of Western Europe and the fresh water lakes of the United States and Canada are totally destroyed.

The pollution of air on the surface of the oceans poses a great threat to mankind. We do not know how long plankton, multi-cellular beings, which produce about 90 percent of the world’s Oxygen, can survive. They live on the surface of water.

If the quantity of oxygen in the air is reduced even by 10 percent, it would become difficult for us to breathe. The air would not support and sustain life and all plants and animals, including human beings, would die and disappear from the face of the earth. It is not a theory which may be right or wrong. It is a scientific fact which cannot be refuted.

It is estimated that if air pollution increases at the present rate for 50 years more, 50 percent of plankton will die and the quantity of oxygen in the air would be reduced by the same proportion.

Sea pollutants also pose a threat to the existence of plankton as well as marine life. When ships sail from Africa to South America, they pass through two thousand kilometers of water, which is full of waste material, produced by the people living on land. The garbage consists mostly of plastic materials, which neither breaks up on land nor in water.

Huge oil spills also drift and accumulate at this place and kill oxygen producing plankton.

Accumulation of waste materials in the oceans of the world is more deadly and dangerous than atomic weapons. There may not be an atomic war due to the balance of power, but destruction of plankton and reduction of the amount of oxygen in the air would be catastrophic for plants and animals including human beings.

(a) We shall breathe with difficulty as if we are on top of the Himalayas. Every living being would always be panting as if something is choking and suffocating it.

(b) For the lack of oxygen in the air no fire will burn and no one would be able to light a cigarette.

(c) Workers and farmers would not be able to work in the factories and fields as they work today and students would not be able to concentrate on their studies in the classroom.

Pollution became a big problem from the time the first atomic bomb was exploded. The Super Powers started making and exploding bigger and bigger bombs and polluting the atmosphere.

The biggest pollution of atmosphere is radiation, which is a by-product of the fission of atoms in atomic power plants. Atomic power plants themselves are ticking time bombs. If accidentally the graphite core, which contains atomic fuel, bursts causing heat and radiation to escape, great havoc and destruction would be caused for thousands of miles around.

While atomic power plants are producing cheap electricity they are also producing the most deadly and dangerous material, radioactive waste. No one knows how to dispose of it properly. All scientists of the world are scratching their heads but cannot find a satisfactory solution to this problem.

# Human Beings Shorten their Lives Themselves

Ja’far as-Sadiq (a.s.) has said that human beings were born to live long, but they shorten their lives themselves. If a man strictly follows the dictates of Islam, abstains from things proscribed under Islamic law and does not indulge in excessive eating and drinking, which is condemned in the Holy Qur’an, he is sure to enjoy a long and healthy life.

Without a shadow of doubt, longevity depends upon following the rules of hygiene and abstaining from excessive eating and drinking.

In the first Century B.C., the average age of a person in Rome was 22 years, because the rules of hygiene were not being followed. In early part of the 20th Century, the average age of the inhabitants of England was 50 years, because they had better hygienic facilities and they did not indulge in excessive eating like the people of ancient Rome. Hygienic conditions in European countries have improved so much today that the average age of a man is 68 years and the average age of a woman is 78 years. Life expectancy would increase further, when a cure for cancer is found and heart attacks and brain hemorrhages, which are due to blocking of the arteries, are prevented.

What increases the life span of a person is not the treatment of certain chronic diseases. It depends, to a large extent, upon his following the rules of hygiene and abstaining from overeating. However, a man would eventually die. When he becomes old and the main organs of his body are worn out, even the diseases which are curable will kill him unless old age, which according to some biologists is itself a disease, can be cured.

Pollution, which is a modern phenomenon, and poses a great threat to mankind, reminds us of the warning given by Ja’far as-Sadiq (a.s.) that it would become difficult for us to live on this planet if we pollute our environment. The World Health Organization has reported, after studying air pollution in some big cities in U.S.A. and Mexico that living and breathing polluted air of these cities has the same adverse affect on lungs and other organs of human body as smoking 40 cigarettes a day. That is why many inhabitants of these places are suffering from chronic ailments including lung cancer.

Another health hazard for mankind is sound pollution. According to statistics, constant sound shortens a man’s life. It is not correct to say that when a person gets used to sound, it does not hurt him. No one ever gets used to sound. It goes on, slowly but surely, damaging his nervous system and the cells of his whole body. Constant sound not only makes one tired and exhausted, it reduces his life span from 5 to 10 years. It is therefore, advisable that one should not live in a big city, if possible.

Another thing which shortens a man’s life is improper diet. The food, which is prepared in the factories and is consumed by the people of Europe, America and other industrialized countries, has many harmful ingredients.

It is reported that no one falls sick in Alaska, because their food is wholesome and healthy. It consists of milk, reindeer meat and white fish, which abound in the rivers of the north. They have only toothache and that also at a very advanced age. Most Alaskans have their full set of teeth up to the age of seventy or eighty.

# Good Advice for Mothers

Ja’far as-Sadiq (a.s.) has advised mothers that they should put their newborn babies to sleep on their left side. This is another proof that he was a genius.

For Centuries this advice was considered by many as meaningless and absurd since no one could see any use in putting babies to sleep on the left side of mothers. Some people even went to the extent of remarking that it was dangerous to carry out his instruction. Mothers might take a turn while sleeping and crush the baby to death.

Muhammad Idris Shafei, who was born in the year 150 of the Hijra (772 A.D.) (Two years after the death of Ja’far as-Sadiq (a.s.) and died in 199 Hijra (821 A.D) in Cairo, was asked as to which side a mother should put her baby to sleep. His reply was, “There is no difference between the right and the left side. A mother can put her baby to sleep on any side she likes.”

No one in the East or West took that advice seriously. Even during the Renaissance period, when scholars in Europe studied every theory critically, no one tried to find out whether it had a scientific basis.

In 1865, Ezra Cornell, a financier and philanthropist of America who had suffered great hardships during his childhood, founded Cornell University in New York. In this university he set up, under the department of medicine, an Institute for the Research on newborn and suckling babies.

This institute has been conducting research on the subject for about a Century. During that period every aspect and every problem of newborn and suckling babies has been thoroughly studied and investigated. No institute in the world has more knowledge and information about babies than this institute. It is impossible that any subject, which is connected with babies, has not been studied there.

In the first half of the 20th Century research scholars of the institute studied 466 pictures of babies in all the famous museums of the world. It was noticed that in 373 pictures mothers were holding their babies in their left arms and in 93 pictures in their right arms.

A research Scholar of the Institute, who traveled to different parts of the world, observed that mothers in every country carried their babies in the left arms. Those, who took them in right arms, were left-handed. They carried their babies in right arms so that their left hands might be free for carrying things. Women of Africa also carried their babies in their left arms; when they did not carry them on their backs.

No woman could give him satisfactory reply as to why she carried her baby in the left arm. Women in Africa knew that their babies like to suckle the left breast more than the right. Some women expressed surprise that their babies could easily find their left breast in the dark when they were hungry during the night. It was explained to them that babies were guided to the left breast by their mother’s heartbeat.

Doctors, who work and study general behaviour of babies in the maternity wards of the attached hospital, send their reports periodically to the Institute. These reports show that babies, who are put to sleep on the left side of their mothers, sleep soundly and peacefully but those who are put on the right side wake up every now and then and cry. It was also reported that for the first few days after their birth, babies would have no rest at all if they were not on the left side of their mothers.

Research Scholars of the Institute expanded the area of their studies. They tried to find out whether babies of all races (other than the whites) also behaved in the same way, it was established that it was a general and universal rule, which applied to babies of all countries and all races of the world.

Research work on the subject was continued. Experts tried to study the behaviour of unborn babies in the wombs of their mothers through X-rays, but it did not produce any result and added nothing to their knowledge. After the invention of holography, holographic pictures of unborn babies were taken which revealed that the mother’s heartbeat reached the ears of the baby in the womb.

Experiments were conducted on different mammals to find out the reaction of the fetus. All experiments showed that whenever the heart of the mother stopped beating, the fetus became restless and agitated, because it feeds on the blood, which comes to it with each and every heartbeat.

These experiments proved that unborn babies are not only used to hearing their mother’s heartbeat, but their very existence depends upon them. Heartbeats mean to them a constant supply of food. Stoppage of heartbeats signals starvation after they are born; they become restless, if they do not hear it. A newborn knows its mother’s heartbeat quite well and that is why it sleeps comfortably and peacefully when it is on the left side of the mother and can hear the heartbeats clearly.

As an experiment, babies in the nurseries of the Research Institute were segregated into two rooms. Artificial heartbeats could be heard in one room but not in the other. Babies who were in the room where heartbeats were heard, remained calm, quiet and peaceful, but those, who were in the other room, started crying. Since then all nurseries have devices, which produce artificial heartbeats, so that babies may remain happy and contented.

Usually the heart of a healthy person, man or woman, beats about 72 times per minute. As an experiment, artificial heartbeats were increased from 72 to 100 and 120 times per minute. As soon as the number of heartbeats was increased all babies started crying. This experiment showed that any increase or decrease in the number of heartbeats is, to babies, an alarm of danger, which makes them cry.

It was also observed that babies, who were in the room where they could hear artificial heartbeats, had a keen appetite for food, took it with great relish and gained weight. But those who were in the other room, where no heartbeats were heard, had no inclination to eat and did not gain as much weight as babies in the other room, although all of them were given the same kind of food.

If Cornell University had not been established and the research work on babies was not done, no one would have ever realized the scientific importance of the advice of Ja’far as-Sadiq (a.s.) that mothers should put their babies to sleep on their left side.

# The Theory of Perpetual Motion

Ja’far as-Sadiq (a.s.) has said that everything in the Universe, including inanimate objects, is always in motion although we may not see it. There is nothing which is without motion.

This theory, which was unacceptable in his time, is a scientific fact today. It is impossible to imagine, explain and describe an object in the Universe that is without motion. Motion is the essence of being. If there is no motion there is no existence.

He has stated that it seems to us that when a person dies, his actions and movements come to an end. It is not so. They will continue in another form. Even if the smallest particles of the human body are converted from matter into energy, they will continue to move in the form of energy till end of time.

He added that we feel the passing of time, because of our internal movement. Similarly our sense of space is due to this movement. Without it we cannot feel the passage of time and have a sense of space.

There are two kinds of motion in every object-motion inside the atoms and perpetual vibration within the molecules. The molecules vibrate from zero to ten trillion times per second according to the temperature.

# Ja’far as-Sadiq (a.s.) and Abu Shakir

Once Abu Shakir, one of his opponents, said to him, “Would you allow me to say something and ask some questions?” “Yes, you can”, replied Ja’far as-Sadiq (a.s.).

Said Abu Shakir; Is it not a Myth that there is Allah? You want people to believe in a thing which does not exist. If there was Allah, we could have felt his existence through our senses. You may say that we can feel His presence by the help of our inner senses, but our inner senses also depend upon our five outer senses. We cannot conjure up an image of anything in which some of our senses were not involved. We cannot conjure up the picture of a person whom we have not met; recall to our memory his voice if we have not heard him and feel the touch of his hand by our inner senses if we have never taken his hand in our hand.

You may say that we can perceive the presence of Allah by our intelligence and not through our inner our outer senses. But our intelligence also needs the assistance of our five outer senses, without which it cannot function. We cannot make any reasoning or come to any conclusion without the help of our senses.

By your imagination you have created a being, which is of your own image. Since you see, talk, hear, work and rest, He also does exactly what you do.

You do not show Him to anyone. To maintain your hold on the people you say that He cannot be seen. You also say that He was not born from the womb of a woman. He does not procreate and that He would not die.

You say that the Universe was created by Allah, who did not talk to anyone, except to the Prophet of Islam. As a matter of fact the Universe came by itself. Does anyone create the grass, which grows in the field? Does it not grow and get green by itself? Does anyone create the ants and the mosquitoes? Do they not come out by themselves?

I must tell you, who claims to be a scholar and the successor of the Prophet, that among all the stories, which circulate among the people, none is more absurd and baseless than the story of Allah, who cannot be seen.

There are many baseless stories, but they, at least, depict real life and present before us the people and personalities, who may themselves be fictitious, but their acts and deeds are like those of real human beings. We can see them. They eat, they drink, they talk, they sleep and they love. When we read these fictitious stories, we enjoy them. We know that they are false, but we seen in them the faces of men and women, who are like us. The people mentioned in the stories might not have existed, but our common sense accepts the existence of such people in the world. However, when we cannot see, feel or touch your Allah, our logic and reasoning, which depend upon our senses, do not accept his existence.

I known that some people, who have been deceived by you, believe in your invisible Allah, but you cannot deceive me and make me believe in Him. I worship God, who is made of wood and stone. Although my God does not talk, but I can see him with my eyes and touch him with my hands.

You say that the God whom I have made from my own hands is not worthy of being worshipped, while you ask the people to worship Allah, Whom you have created by your imagination.”

Ja’far as-Sadiq (a.s.) did not say a word during the long tirade of Abu Shakir. Sometimes his students, who were present, wanted to intervene but he asked them to remain quiet. When Abu Shakir stopped his lengthy discourse, he asked him, if he had anything more to say.

Retorted Abu Shakir, “By introducing your invisible Allah to the people, you want to acquire wealth and position and have a respectable, comfortable and luxurious life. These are my last words. I do not want to say anything more.”

Ja’far as-Sadiq (a.s.) said, “I would like to start with the last part of your speech. Your accusation that I want money, position and a comfortable life would have been justified if I were living like a caliph. You have seen today that I have eaten a few morsels of bread only and nothing else. I invite you to my house to see for yourself what I have for dinner and how I live.

Abu Shakir, if I wanted to acquire wealth and get rich I would have earned money and got rich by my knowledge of Chemistry. Another way to get rich was to do business. I have more knowledge about foreign markets than any merchant in Medina. I know what goods are produced in different countries and where to sell them for profit. I also know how to bring them here to reduce the cost of transport. Our merchants import goods only from Syria, Iraq, Egypt and some other Arab countries. They do not know what goods are available in Isphahan, Rasht and Rome; otherwise they would have imported them and sold them with profit.

Abu Shakir, you have said that I ask the people to worship Allah to deceive them and to get rich. I must tell you that I have never taken anything from anyone, except some fruits, as presents. One of my friends sends to me every year fresh dates from his garden and another some pomegranates from Taif. I accept these presents so that they may not get offended.

I have heard, O Abu Shakir, that your father was a pearl merchant. Perhaps you may have some knowledge about pearls. But I know all about pearls and precious stones. I can also appraise their market value. If I wanted to get rich I would have worked as a jeweller. Can you test and recognize a precious stone? Do you know how many kinds of rubies and emeralds there are in the world?”

“I know nothing about them”, replied Abu Shakir.

“Do you know how many kinds of diamonds there are and what colours they have?” asked Ja’far as-Sadiq (a.s.).

“I do not know”, replied Abu Shakir.

Ja’far as-Sadiq (a.s.) said, “I am not a jeweller, but I know all about pearls and precious stones. I also know where they come from. All jewellers know about gems, what I know, but few of them know their sources.”

“Do you know what makes a diamond shine?” asked Ja’far as-Sadiq (a.s.).

“I never was a diamond merchant, nor was my father. How can I know why diamonds shine?”, replied Abu Shakir.

Said Ja’far as-Sadiq (a.s.), “Diamonds are obtained from the beds of rivers and streams. Rough diamonds are cut by experts. It is the cut of a diamond, which gives it its brilliance. Those who are experts in cutting diamonds are trained from childhood in the profession of their forefathers. Cutting a diamond is a very delicate and difficult art. A diamond is cut only by a diamond.

Abu Shakir, I have said all this simply to show to you that if I wanted to accumulate wealth, I could have done so by making use of my knowledge about jewels. I have replied to your accusations and now I shall deal with your objections.

Abu Shakir, you have said that I have fabricated stories and ask the people to worship Allah, who cannot be seen. You refuse to acknowledge the existence of Allah because He cannot be seen. Can you see inside your own body?”

Replied Abu Shakir, “No, I cannot.”

Ja’far as-Sadiq (a.s.) said, “If you could have seen what is inside you, you would not have said that you do not believe in Allah, who cannot be seen.”

Abu Shakir asked, “What is the relationship between seeing within one’s own body and the existence of unseen Allah?”

Ja’far as-Sadiq (a.s.) replied, “You have said just now that a thing, which cannot be seen, touched, tasted or heard, does not exist.”

Abu Shakir said, “Yes, I have said that and I believe it is true.”

Ja’far as-Sadiq (a.s.) asked, “Do you hear the sound of the movement of blood in your body?”

Said Abu Shakir, “No, I do not. But does blood move in the body?”

Ja’far as-Sadiq (a.s.) said, “Yes, it does. It makes a full circuit of your body. If the circulation of blood stops for a few minutes you will die.”

Abu Shakir said, “I cannot believe that blood circulates in the body.”

Ja’far as-Sadiq (a.s.) said, “It is your ignorance, which does not let you believe that your blood circulates in your body, and the same ignorance does not let you believe in the existence of Allah, Who cannot be seen.” Then he asked Abu Shakir whether he has seen the tiny living beings, which Allah has created in his body.”

Ja’far as-Sadiq (a.s.) continued, “It is because of these small creatures and their wonderful work that you are kept alive. They are so small that you cannot see them. Since you are a slave of your senses, you cannot know about their existence. If you increase your knowledge and decrease your ignorance, you will come to know that these small beings in your body are as large in number as the particles of sand in the desert.

“These small creatures are born in your body, multiply in your body, work in your body and die in your body. But you never see them, touch them, taste them or hear them in your lifetime.”

“It is true that one who knows himself knows Allah. If you had known yourself and had the knowledge of what is going on inside your body, you would not have said that you do not believe in Allah, without seeing Him.”

Pointing to a huge stone he said, “Abu Shakir, do you see the stone, which is at the foot of that portico? To you it seems lifeless and motionless, because you do not see the brisk motion, which is inside the stone. Again it is lack of knowledge or your ignorance, which would not let you believe that there is motion inside the stone. The time will come when the learned people would see the motion which is in the stone.”

Continued Ja’far as-Sadiq (a.s.), “Abu Shakir, you have said that everything in the Universe came by itself and has no creator. You think that the grass in the field grows and gets green by itself. You must know that the grass cannot grow without seeds and seeds would not germinate without moisture in the soil and there would be no moisture without rain. The rain does not fall by itself. First the water vapour rises and gathers above in the atmosphere in the form of clouds. The winds bring the clouds. Then the water vapour condenses and falls down as rain. The rain must also fall at the right time; otherwise no grass will grow and become green.

Take the seeds of ten kinds of herbs and put them in a closed jar, which has sufficient water, but no air. Would they germinate? No, in addition to water, seeds also need air. It is possible to grow grass, herbs and fruits in hot houses, when it is very cold, provided there is sufficient air. Without the presence of air no grass will grow in the fields and get green. If there is no air, all plants and animals, including human beings, would die.

Abu Shakir, do you see the air, on which your very existence depends. You only feel it when it moves. Can you refuse to believe in the existence of air? Can you deny that to grow and get green the grass needs many things-seeds, soil, water, air, a suitable climate and above all a strong managing power, which may coordinate the action of these different elements? That Managing and Coordinating Power is Allah.

You say that everything comes by itself, because you are not a scientist. No scientist would ever say that. All scientists and all scholars believe in the existence of a creator, albeit, they may call Him by different names. Even those, who do not believe in Allah, believe in a Creative Force.

Abu Shakir, it is not because of one’s knowledge, but it is due to his ignorance that he does not believe in Allah. When a wise man thinks of himself, he finds that his own body needs a controller so that all its organs and systems may function properly. He then realizes that this vast Universe also needs a controller or supervisor so that it may run smoothly.

You said just now that both of us create our own gods, you by your hands and I by my imagination. But there is a big difference between your god and my Allah. Your god did not exist before you made him out of wood or stone, but my Allah was there before I could think about Him. I do not create my Allah by my hands or by my brain. What I do is to know Him better and think of His Greatness. When you see a mountain you try to know more about it. It is not creating the mountain by imagination. That mountain was there before you saw it and it would be there when you are gone.

You cannot know much about the mountain because of your limited knowledge. The more your knowledge grows, the more you will learn about it. It is impossible for you to find out when and how that mountain came into being and when it would disappear. You cannot find out what minerals are there inside or underneath the mountain and what is their benefit to mankind.

Do you know that the stones, out of which you make your idols, came into being thousands of years ago and shall exist for thousands of years more. These stones have come here from a distant place. They could travel that long journey because different parts of the earth are always moving, but this movement is so slow that you do not feel it.

There is nothing in the Universe, which is not in motion. Rest or motionlessness is meaningless. We are not at rest even when we are sleeping. We are in motion because the earth is in motion. Besides, we have a motion inside our own bodies.

Abu Shakir, if you had any knowledge about the piece of stone, out of which you carve an idol, you would not have denied the existence of Allah and said that I have created him by my imagination. You do not know what a stone is and how it came into being. Today you can handle it as you like and cut it into any shape or form, but there was a time when it was in liquid state. Gradually it cooled down and Allah solidified it. In the beginning it was quite brittle and would have broken into pieces in your hand like a piece of glass.”

Asked Abu Shakir, “Was it in a liquid condition before?”

“Yes, it was”, replied Ja’far as-Sadiq (a.s.).

Abu Shakir burst out laughing. One of the students of Ja’far as-Sadiq (a.s.) got angry and was about to say something when he was stopped by his teacher.

Abu Shakir said, “I am laughing because you say that stones are made of water.”

Ja’far as-Sadiq (a.s.) replied, “I did not say that the stones are made of water. What I had said was that in the beginning they were in a liquid state.”

Abu Shakir said, “What difference does it make? Liquid and water are one and the same.”

Ja’far as-Sadiq (a.s.) replied, “There are many liquids which are not water. Milk and vinegar are liquids which are not water, although they have water content in them. In the beginning the stones were liquid like water and they flowed like water. Gradually they cooled down and became hard so that you could cut and shape them. The same hard stones will turn liquid if heated.”

Said Abu Shakir, “When I go home I will check the truth of your statement. I will put the stone in the fireplace and see if it turns into liquid or not.”

Said Ja’far as-Sadiq (a.s.), “You cannot liquefy stone in your fireplace. Can you liquefy a piece of iron at home? A very high temperature is required to turn solid stone into liquid.

Do you realize how you could make idols out of stones? It was Allah, who made the stones. It was He Who created you and gave you hands with unique fingers, which enabled you to handle tools and chisel the idols from stones. Again it was He who gave you power and intelligence, which you used for making the idols.

Abu Shakir, do you think that the mountains are only heaps of stones? The Great Allah has created them to serve some very useful purpose. They were not created so that you may take stones and turn them into idols. Wherever there is a mountain there is flowing water. Rain and snow which fall on the mountaintops produce streams of fresh water. These streams combine together to form big rivers, which irrigate farms and fields. The people who live in the valleys, through which the rivers flow, are assured of constant supply of water.

People, who can afford it, go to the mountain during the summer season to escape the heat of the plains.

The mountains work as a great bulwark and protect towns and villages, which are in their valleys, from the devastation and destruction of hurricanes.

Green mountains provide good grazing grounds for sheep. When scorching heat burns the pastures down in the plains and no fodder is left, the shepherds take their flocks of sheep to the mountains and stay there till the end of summer.

Mountains are habitats of birds and animals, some of which are a good source of food for those who live there.

Even the mountains, which are not green, are not without some use. If the people try, they may discover in them mines of metals and minerals which are useful for mankind.

Abu Shakir, I am too small and too weak to create Allah with my brain. It is He, who has created my brain, so that I may think of Him and know that He is my Creator. He was there before I came into being and He would be there when I am no more. I do not mean that I would be totally destroyed. Nothing in the Universe is totally destroyed. Everything is subject to change. It is only Allah, Who does not change.

Abu Shakir, please tell me sincerely to whom will you turn for help when you are in trouble? Do you hope that the idol you carve out of stone can come to your rescue? Can it cure you when you are sick; save you from mishaps and calamities; save you from starvation and help you pay your debts?”

Abu Shakir replied, “I have no such expectations from stone, but, I think there is something inside the stone, which will help me. Moreover, I cannot help worshipping it.”

Ja’far as-Sadiq (a.s.) enquired, “What is inside the stone? Is it also stone?”

“I do not know what it is. But it cannot help me if it is also stone”, replied Abu Shakir.

Said Ja’far as-Sadiq (a.s.), “Abu Shakir, what is inside the stone and is not stone and can help when you are in trouble is, Allah.”

Abu Shakir pondered over the subject for a while and then said, “Is Allah, who cannot be seen inside the stone?”

Ja’far as-Sadiq (a.s.) replied, “He is everywhere.”

Abu Shakir said, “I cannot believe that a thing may be everywhere but remain unseen.”

Ja’far as-Sadiq (a.s.) said, “Do you know that air is everywhere but cannot be seen?”

Said Abu Shakir, “Although I cannot see air, I can, at least, feel it when it moves. But I can neither see your Allah nor feel His presence.”

Ja’far as-Sadiq (a.s.) said, “You do not feel the presence of air when it is not moving. The air is only a creation of Allah. He is everywhere, but you cannot see Him or feel His presence by your senses. You have admitted just now that although you do not see it, but your instinct or your soul tells you that there is something inside the stone, and is not the stone, which can help you. That something is Allah. Your instinct also tells you that you cannot live without Allah and without worshipping Him.”

Abu Shakir said, “It is true. I cannot live without worshipping idols.”

Said Ja’far as-Sadiq (a.s.), “Do not say idols. Say Allah. It is He, Who is worthy of worship. Just like you, everyone is obliged to worship Him. One, who does not worship Allah, has no guide and no guardian. He is just like one, who cannot see, cannot hear, cannot feel and cannot think. He does not know where to go and on whom to depend when in trouble.

Worshipping Allah is a part of life. Every living being worships Him instinctively. Even the animals cannot live without worshipping Him. We cannot ask them and they cannot tell us that they worship Allah, but their well-regulated and orderly life is sufficient proof that they worship Him.

I do not say that animals believe in Allah and worship Him just as we do. But there is no doubt that they obey the laws made by their Creator faithfully, which means they worship Him. If they were not obedient to their Creator, they could not have such an orderly and regulated life.

We see that just before the advent of spring the lark (a kind of small bird) always comes at the same time and sings, as if to give us the tiding of the new season. The itinerary of these migratory birds is so regulated and their schedule so fixed that even if the last days of winter are still cold, their arrival is not delayed for more than a few days. When the swallow (a migratory bird) returns after covering a distance of thousands of miles, it builds its nest at the same place, where it had built it last spring. Was it possible for these small birds to have such a well organized life if they did not obey the laws of Allah and worship Him?”

Abu Shakir, even the plants obey the laws made by Allah faithfully and worship Him. Out of 150 species of plants, which are further divided into hundreds of sub-species you will not find even one plant, which has a disorganized and disorderly life.

Abu Shakir, just like us, the plants also do not see their Creator, but they worship Him by obeying His laws instinctively.

I know that you will not accept, or perhaps, you do not understand, what I say. A man must have sufficient knowledge to understand complicated problems.

Abu Shakir, not only animals by their animal instinct and plants by their plant instinct obey Allah and worship Him, the lifeless and inanimate objects also, with whatever instinct they have, obey Allah and worship Him. If they did not worship Him, they would not have followed the laws made by Him. As a result, their atoms would have broken apart and they would have been destroyed.

The light of the Sun also worships Allah by obeying His laws, which are very stringent and exact. It comes into being by the combination of two opposite forces. These forces also obey the laws of Allah and worship Him, otherwise they cannot produce light.

Abu Shakir, if there was no Allah there would have been no Universe and neither you nor me. The sentence, “There is no Allah’, is meaningless. The existence of Allah is a must. If attention of Allah is diverted, even for a moment from the affairs of the Universe to something else, it would break up. Everything in the Universe obeys His laws, which are permanent and eternal. Because of His absolute wisdom and knowledge, he could make such wonderful laws, which will last forever. Each and every law, made by Him serves some special and useful purpose.”

When Ja’far as-Sadiq (a.s.) concluded his discourse, Abu Shakir fell into a deep reverie as if he was greatly inspired.

Ja’far as-Sadiq (a.s.) asked, “Do you now believe that Allah, who cannot be seen, does exist and what you worship is the unseen Allah?”

Abu Shakir replied, “I am not yet convinced. I am in a quandary. I am full of doubts and misgiving about my faith and my convictions.”

Ja’far as-Sadiq (a.s.) remarked, “Doubt about idol worship is the beginning of the worship of Allah.”

# Death, a Boon to Mankind

Continuing his discourse Ja’far as-Sadiq (a.s.) said, “Abu Shakir, one of the laws of Allah is death. Ignorant people think that death does not serve any useful purpose or it is, rather, harmful to human beings. Some people have said that it is a cruel act of Allah.

Death serves a very useful purpose and is essential for the survival of mankind. If there were no death the human race would have become extinct. Scientists, who tried in the past to do away with natural death, were making a big mistake. I would appeal to the future generation of scientists that they should not try to do away with death.

If we suppose that nothing would happen and that human beings would live happily and peacefully after the conquest death, they would multiply so much that every piece of land would be occupied by them and nothing would be left for agriculture and farming. There would be so much shortage of food that the hungry people would first eat all the animals and then start eating one another.

Committing suicide is against the Commandments of Allah. He has ordered us to preserve our lives and the only way to keep us alive is not to indulge in overeating and drinking. Excessive eating and drinking shortens life. It is for the safety and preservation of life that my grandfather, Prophet Muhammad (s.a.w.s.), has asked us not to eat too much meat and make our stomachs graveyards of animals.”

Abu Shakir asked, “What does it mean?”

Ja’far as-Sadiq (a.s.) replied, “It means that we should abstain from eating too much meat.”

Abu Shakir asked, “Please let me know what is death?”

Ja’far as-Sadiq (a.s.) replied, “Death is cessation of the functions of different parts of the human body, specially stopping of heart beats and breathing.”

Abu Shakir asked, “What causes one to die.”

Ja’far as-Sadiq (a.s.) replied, “One cause of death is sickness, including the internal sickness, which causes sudden death. He other cause of death is old age. Even if a man is healthy he will die some day due to old age. The Greek philosopher, Hippocrates, has said that old age is also a kind of sickness. No one will die when it is known how to treat it and cure it.”

Abu Shakir remarked, “But no physician can cure the sickness of old age.”

Ja’far as-Sadiq (a.s.) added, “I do not think that old age can ever be cured. Allah has created old age and death by His Will and with a great purpose. Whatever Allah has ordained must happen. He has said that everything would die except He, the Creator of Life and Death. Death is the change of matter from one form to another. Nothing in nature remains in one and the same condition forever. Death is for the good of mankind. It is essential for the survival and continuation of human race. If it was not created by Allah, human beings would have created it themselves.”

# Ja’far as-Sadiq (a.s.) and Jabir Ibn Hayyan

Jabir ibn Hayyan was one of his students, who used to have long discussions with his teacher. One day, in the course of teaching philosophy, Ja’far as-Sadiq (a.s.) said that everything in the Universe is in motion. If there was no motion the shape of things would be quite different from what it is today.

Jabir asked, “Are you sure that everything in the Universe is in motion?”

“Yes, I am sure,” replied Ja’far as-Sadiq (a.s.).

Jabir asked, “Does the sound have motion?”

Ja’far as-Sadiq (a.s.) replied, “Yes, it has. But the speed of sound is slower than the speed of light. You see from a distance the sledge of an ironsmith falling on his anvil first and hear the sound afterwards. It is because the light waves, which travel faster, reach your eyes first and then the slow-moving sound waves afterwards.”

Jabir asked, “Can you tell me the speed of sound?”

Ja’far as-Sadiq (a.s.) replied, “Archimedes, the Greek philosopher, who measured the speed of sound, has said that if a man is 400 zira (one zira-40 inches) away from the source of sound, he would hear if after 8 seconds. The greater the distance, the longer it will take to reach him.

Some Greek philosophers have said that motion is a form of matter and matter is a kind of motion. Without motion there would be no matter and if motion stops, the matter would be destroyed. Some of them considered human thoughts also as an offshoot of matter. They said that there could be no thought without matter, just as there can be no fragrance without flowers. If the matter were destroyed there would be no thoughts at all.

O Jabir, by saying that everything would be destroyed, they contradict themselves. The same philosophers had said before and it is also believed today that nothing is destroyed in the Universe. Everything changes its form. Human beings are also not totally destroyed after their death. They only change their form. Just like them, their thoughts also change form. What remains of a person unchanged is his soul, which represents his moral and spiritual qualities.

Scientists and philosophers have to prove their theories by reason and logic so that they may be accepted by other scientists and philosophers. They are not concerned with common people, who cannot and will not understand them. Religion is different from science and philosophy.

Canons and doctrines of our religion as well as of all other religions, which came before Islam, were communicated in simple terms so that they could be understood easily by everyone, but it was not explained why they were sent. Allah had chosen our Prophet to spread Islam among all the people of the world. It was not sent for only the intellectuals, who would not have accepted anything, which was not proved by logic and reason.

Our Prophet expressed the canons and doctrines of our religion in very simple terms so that they could be understood by all, but he did not give the reasons as to why they were being imposed, which the common people could not understand and cannot understand even today. The doctrines of Islam are, primarily, for the belief of the people and not for their brains. Those, who have a brain, can find out for themselves why they are formulated. Development of the brain depends upon acquisition of knowledge. Therefore, those who wish to know and understand the reasons would acquire knowledge and develop their brain. But those who cannot should believe in them and follow them faithfully. It is sufficient for their salvation.”

Jabir asked, “Will the time come when knowledge will become universal?”

Ja’far as-Sadiq (a.s.) replied, “Yes, the time will come when human beings will know the importance of education and realize that it is the duty of every individual to acquire knowledge. At that time sufficient facilities would be made available for that purpose.”

Jabir said, “Then everyone will become a scholar.”

Ja’far as-Sadiq (a.s.) replied, “Even at that time and in spite of the facilities, all people will not become educated, since everyone does not have the same aptitude for learning. However, they would not be like the illiterate people of today. Every person will have some knowledge and power of understanding. The learned people would, therefore, be able to explain to those, who wished to know, the truth and rationale of the principles of Islam.”

Jabir asked, “What is the most powerful force and strongest desire in the life of a man?”

Ja’far as-Sadiq (a.s.) replied, “The strongest desire in a man’s life is to live and to protect his life.”

Jabir asked, “Why there is so much difference between human beings and inorganic substance and why they (human beings) are more like animals and plants than inanimate objects?”

Ja’far as-Sadiq (a.s.) replied, “There is a difference between inorganic substances and human beings because they (inorganic substance) follow some fixed and unchanging laws, while humans do not. That is why, they are always and everywhere, more or less, alike, but human beings differ from one another. Every person differs from the other in intelligence, aptitude, aspirations, taste, skills, and so on. Another important cause of difference between the two is that inorganic substances have no desires as humans have.

Since inorganic substances follow some fixed laws, there is little difference in the properties of a substance from one place to another and it is possible to predict what changes it would undergo in future. But in the case of human beings such predictions are impossible. There are so many factors which affect the life of a person and influence his decisions that he himself does not know what will happen to him in future and what he would have to do next.

Plants and animals are like human beings, because they are also governed by changing laws. They follow some fixed laws also, but so do the humans. Although human beings have some common desires, such as the desire to eat, drink, sleep and have a mate, yet there are so many differences among them that they have split into many groups and denominations and fight each other.”

# Stars of the Sky

Jabir asked, “What are the shining stars, which are at a fixed distance from us and are always in motion?”

Ja’far as-Sadiq (a.s.) replied, “Each star is a small Universe within the great Universe. It is a collection of heavenly bodies, i.e., a sun and its satellites.

They are in perpetual motion so that they may not fall down and break up. If their movement stops, the Universe will come to an end. It is perpetual motion, which creates life. In other words perpetual motion itself is life. If the motion stops, life would cease to exist.”

Jabir asked, “What is the shape and form of stars in space?”

Ja’far as-Sadiq (a.s.) replied, “Some stars are solid, some liquid and some in gaseous state.”

Jabir said in wonderment, “How can we believe that stars may be in a gaseous state. Is it possible for gases to shine as the stars do at night?”

Ja’far as-Sadiq (a.s.) said, “Not all the stars, but only those which are very hot, are in the form of gas. Excessive heat turns them into gas and makes them shine, just as very high temperature of our sun makes it shine. It is also in a gaseous state.”

“Jabir asked, “How does the movement of stars keep them from falling?”

“Ja’far as-Sadiq (a.s.) said, “Put a stone in a sling and swing it round your head. The stone will stay in the sling so long as you are rotating it. But as soon as you stop the rotation, the stone will fall down on the ground. In the same way the perpetual motion of stars keeps them from falling down.”

“Jabir asked, “Are there human beings in the stars? You have said just now that each star is a collection of heavenly bodies.”

“Ja’far as-Sadiq (a.s.) replied, “I cannot say that there are human beings in other worlds, but I can say that there are living beings, which we cannot see, because of great distance between us.”

“Jabir said, “What is the proof that there are living beings in other worlds?”

“Ja’far as-Sadiq (a.s.) replied, “It is my belief that Allah, Who has created the Universe, knows everything. In His Book, the Holy Qur’an, He has mentioned the name of Jinns. They are living beings, which cannot be seen. Perhaps the Jinns, who are in other worlds, may be like us.”

# Old Age

Jabir asked, “Why do we get old?”

Ja’far as-Sadiq (a.s.) replied, “Diseases are of two kinds-Acute and Chronic. Acute diseases come all of a sudden. They are either cured soon or they kill the patients. Chronic diseases are also of two kinds. Some of them have a prolonged life and some are incurable. Old age is a chronic disease, which is incurable.”

Jabir said, “It is the first time that I hear from you that old age is kind of chronic disease.”

Ja’far as-Sadiq (a.s.) said, “All of us suffer from this disease. Some at an early age and some at an advanced age. Those, who obey the commands of Allah and abstain from the things proscribed under Islamic Code, take a long time to age, but others get old soon.”

Jabir asked, “Why do we become dull-minded and childish in our old age?”

Ja’far as-Sadiq (a.s.) replied, “It is not a general rule. Everyone does not become dull minded in his old age. Some people are dull minded and stupid when they are young, but because of their blooming age no one takes much notice of their stupidity. But as they grow older it becomes apparent and noticeable. On the other hand those people who are intelligent and wise when they are young, remain so in their old age. However, they do not retain physical strength of their youth. The store of knowledge of the learned people may not be very big, when they are old. Moreover, in old age, their wits become sharper, their views balanced and their judgement impartial. They always side and support the just cause.”

Jabir said, “It is said that we become forgetful in our old age. Is it a general rule?”

Ja’far as-Sadiq (a.s.) replied, “No, it is not the old age, which makes one forgetful. It is the decrease in the power of memory. The power of memory is just like any other power of the human body. Every power, which is not used, becomes weak. A young man, who does not use his memory, becomes forgetful.

Old people, who confine themselves within the four walls of their houses, do not pay any attention to their environment, do not take any notice of the events and happenings of the world and add nothing to their reservoir of memory, become forgetful. They also start losing gradually what they had stored in their memory till they forget everything. But a person, who does not let the weakness of old age deteriorate his power of memory, finds it stronger than what it was when he was young. Since he has been using his memory throughout his whole life, he finds it at its zenith in his old age.”

# Theory of Germs

Jabir asked, “What are your views about sickness? Does it come by the order of Allah or is it accidental?”

Ja’far as-Sadiq (a.s.) replied, “Diseases are of three kinds. Some are from Allah, some are of our own creation and some are caused by tiny living beings.

Old age is a good example of the sickness which is from Allah. There is no escape from it. Sooner or later everyone must suffer from this disease and die.

We suffer from some diseases due to our ignorance and following our false desires. We have been warned in the Holy Qur’an not to indulge in excessive eating and drinking. If we eat a few morsels less and drink a few draughts less we shall be safe from many diseases.

Many diseases are caused by the enemies of the human body. These enemies are very small. They are so small that we cannot see them with our eyes. To protect us and to fight against these enemies, Allah has provided us with a large number of guards. Our guards are inside our bodies. They are so small that they cannot be seen with the naked eye. When the enemies enter the human body and attack it, the guards put up a fight against them and try to annihilate them. When they are successful in their fight we recover from sickness.”

Jabir asked, “Who are our enemies that attack us and make us sick?”

Ja’far as-Sadiq (a.s.) replied, “They are of many kinds, but their constituents are limited?”

Jabir said, “I cannot understand what you mean. How can they be of different kinds, but made of limited number of things?”

Ja’far as-Sadiq (a.s.) explained, “The book you read has thousands of words and each word has a different meaning, but all of them are composed of a limited number of letters. Similarly our enemies are of thousands of kinds, but are made of limited number of substances. This point can be explained by another example. There are thousands of animals and all of them are made of flesh, blood and bones, but they are not alike. A cat is not like a camel. One is carnivorous and the other herbivorous.”

# Ja’far as-Sadiq (a.s.) and Mufazzal Bin Omar

One of the students of Ja’far as-Sadiq (a.s.), was Mufazzal bin Omar, who has left behind valuable records of lectures of that great scholar. One day he asked the Imam (a.s.) in the classroom whether there were in reality auspicious and inauspicious hours, as stated by astrologers and fortunetellers.

Ja’far as-Sadiq (a.s.) replied, “Whatever is related to superstition, sorcery, magic, voodoo, etc., it condemned by Allah and prohibited by Islam.”

Mufazzal said, “Auspicious and inauspicious times are revealed by astrologers and they are not magicians.”

Ja’far as-Sadiq (a.s.) replied, “When an astrologer claims to reveal auspicious and inauspicious hours he become a magician.”

Mufazzal said, “Do you mean that all the people who believe in auspicious and inauspicious hours are wrong?”

“Yes, they are”, replied Ja’far as-Sadiq (a.s.), “But we have favourable and unfavourable days.”

Mufazzal remarked, “It means the same thing as what the astrologers say.”

Said Ja’far as-Sadiq (a.s.), “Favourable and unfavourable times are different from what the astrologers say. They depend upon the person himself. We have once every few days or every 24 hours favourable times according to our physical condition and temperament. Because many of our inner organs perform some operations in the daytime and some at night. The composition and density of our blood changes during different hours of the day and night. When we get up to offer our morning prayers, our blood is one fifth or one fourth less dense than what it is when we go to bed at night after our daily chores. When the density of blood is low we feel lively and active and when it is high we are dull and drowsy. We can call them favourable and unfavourable times of our lives.

This fact was known to ancient philosophers also. Hippocrates, the Greek physician, has said that our liver performs many functions, but not at one and the same time. Every work has its own time. That is why our mood and temperament are more congenial and suitable for certain types of work at certain times of day and night.

Medicine for asthma is more effective, if it is taken at midnight rather than at any other time. It may not cure the disease, but it will give relief to the patient and help him sleep well. Therefore, to asthma patient midnight is an auspicious time for taking medicine.

Food, which makes you lazy and dull, is baleful and sinister and the time when you are not inclined to work after heavy meals is an unpropitious time for you. On the other hand when you find yourself active, full of energy and fit for work, it is a propitious time for you. These are auspicious and inauspicious times of our lives and not what the astrologers say.”

# The Holy Qur’an

# And

# Modern Science

By Dr. Maurice Bucaille

(French Academy of Medicine)

On 9th November 1976, an unusual lecture was given at the French Academy of Medicine. Its title was ‘Physiological and Embryological data in the Holy Qur’an.’ I presented my study on the existence in the Holy Qur’an of certain statements concerning physiology and reproduction. My reason for doing this was that our knowledge of these disciplines is such that it is impossible to explain how a text produced at the time of the Holy Qur’an could have contained ideas that have only been discovered in modern times.

There is indeed no human work prior to modern times that contains statements which were equally in advance of the state of knowledge at the time they appeared and which might be compared to the Holy Qur’an.

In addition to this, a comparative study of data of a similar kind contained in the Bible (Old Testament and Gospels) seemed desirable. This is how the project was formed of a confrontation between modern knowledge and certain passages in the Holy Scriptures of each monotheistic religion. It resulted in the publication of a book under the title, The Bible, the Holy Qur’an and Science. The first French edition appeared in May 1976. (Seglers, Paris). English and Arabic editions have now been published.

It comes as no surprise to learn that Religion and Science have always been considered to be twin sisters by Islam and that today, at a time when science has taken such great strides, they still continue to be associated, and furthermore certain scientific data are used for the better understanding of the Holy Qur’anic text. What is more, in a Century where, for many, scientific truth has dealt a deathblow to religious belief, it is precisely the discoveries of science that, in an objective examination of the Islamic Revelation, have highlighted the supernatural character of certain aspects of the Revelation.

When all is said and done, generally speaking, scientific knowledge would seem, in spite of what people may say to be highly conducive to reflection on the existence of God.

Once we begin to ask ourselves in an unbiased or unprejudiced way about the metaphysical lessons to be derived from some of today’s knowledge, (for example our knowledge of the infinitely small or the problem of life), we indeed discover many reasons for thinking along these lines. When we think about the remarkable organisation presiding over the birth and maintenance of life, it surely becomes clear that the likelihood of it being the result of chance get less and less, as our knowledge and progress in this field expand. Certain concepts must appear to be increasingly unacceptable; for example, the one put forward by the French winner of the Noble prize for Medicine who tried to get people to admit that living matter was self-created as the result of fortuitous circumstances under the effect of certain outside influences using simple chemical elements as their base. From this it is claimed that living organisms came into being, leading to the remarkable complex being called man. To me, it would seem that the scientific progress made in understanding the fantastic complexity of higher beings provides strong arguments in favour of the opposite theory: in other words, the existence of an extraordinarily methodical organisation presiding over the remarkable arrangement of the phenomena of life.

In many parts of the Book, the Holy Qur’an leads, in simple terms, to this kind of general reflection. But it also contains infinitely more precise data, which are directly related to facts discovered by modern science: these are what exercise a magnetic attraction for today’s scientists.

## Encyclopedia Knowledge Necessary to Understand the Holy Qur’an

For many Centuries, man was unable to study them, because he did not possess sufficient scientific means. It is only today that numerous verses of the Holy Qur’an dealing with natural phenomena have become fully comprehensible. I should even go so far as to say that, in the 20th Century, with its compartmentalization of ever-increasing knowledge, it is not always easy for the average scientist to understand everything he reads in the Holy Qur’an on such subjects, without having recourse to specialized research. This means that to understand all such verses of the Holy Qur’an one is today required to have an absolutely encyclopedic knowledge, by which I mean, one which embraces very many disciplines.

I use the word ‘science’ to mean knowledge which has been soundly established. It does not include the theories which, for a time, help to explain a phenomenon or a series of phenomena, only to be abandoned later in favour of explanations which have become more plausible thanks to scientific progress. I basically only intend to deal with comparisons between statements in the Holy Qur’an and knowledge which is not likely to be subject to further discussion. Wherever I introduce scientific facts which are not yet 100% established, I shall, of course, make this quite clear.

There are also some very rare examples of statements in the Holy Qur’an which have not, as yet, been confirmed by modern science: I shall refer to these by pointing out that all the evidence leads scientists to regard them as being highly probable. An example of this is the statement in the Holy Qur’an that life is of aquatic origin; and another is that somewhere in the Universe there are Earths similar to our own.

These scientific considerations should not, however, make us forget that the Holy Qur’an remains a religious book par excellence and that it cannot, of course, be expected to have a ‘scientific’ purpose per se. Whenever man is invited to reflect upon the works of Creation and the numerous natural phenomena he can observe, the obvious intention, in using such examples, is to stress Divine Omnipotence. The fact that, in these reflections, we can find allusions to data connected with scientific knowledge is surely another of God’s gifts whose value must shine out in an age where scientifically based materialistic atheism seeks to gain control at the expense of the belief in God.

Throughout my research I have constantly tried to remain totally objective. I believe I have succeeded in approaching the study of the Holy Qur’an with the same objectivity that a doctor has when he opens a file on a patient: in other words, by carefully confronting all the symptoms he can find to arrive at a diagnosis. I must admit that it was certainly not faith in Islam that first guided my steps, but simple research for the truth. This is how I see it today. It was mainly this fact, which, by the time I had finished my study, had led me to see in the Holy Qur’an a text revealed to a Holy Prophet (s.a.w.a.).

We shall examine statements in the Holy Qur’an which appear today merely to record scientific truth, but which men in former times were only able to grasp the apparent meaning of. How is it possible to imagine that, were there any subsequent alterations to the texts, these obscure passages scattered throughout the text of the Holy Qur’an were able to escape human manipulation? The slightest alteration to the texts would automatically have destroyed the remarkable coherence that is characteristic of them, and prevented us from establishing their conformity with modern knowledge. The presence of these statements spread throughout the Holy Qur’an looks to the impartial observer like an obvious hallmark of authenticity.

The Holy Qur’an is a preaching which was made known to man in the course of a Revelation that lasted roughly twenty years. It spanned two periods of equal lengths on either side of the Hegira. In view of this, it was natural for reflections having a scientific aspect to be scattered throughout the Book. In the case of a study such as the one we have made, we had to regroup them according to subject, collecting them Sura by Sura.

How should they be classified? I could not find any indications in the Holy Qur’an suggesting any particular classification. So I have decided to present them according to my own personal one.

It would seem to me, that the first subject to be dealt with is the Creation. Here it is possible to compare the verses referring to this topic with the general ideas prevalent today on the formation of the Universe. Next, I have divided up verses under the following general headings: Astronomy, the Earth, the Animal and Vegetable Kingdoms, Man, and Human Reproduction in particular; the latter is a subject which, in the Holy Qur’an, is allotted a very important place. To these general headings it is possible to add sub-headings.

Furthermore, I thought it useful to make a comparison between Holy Qur’anic and Biblical narrations from the point of view of modern knowledge. This has been done in the case of such subjects as the Creation, the Flood and the Exodus.

# Creation of the Universe

Let us first examine the Creation as described in the Holy Qur’an.

An extremely important general idea emerges: its dissimilarity with Biblical narration. This idea contradicts the parallels which are often, and wrongly, drawn by Western authors to underline solely the resemblances between the two texts.

When talking of Creation, as of other subjects, there is a strong tendency in the West to claim that Muhammad only copied the general outlines of the Bible. It is indeed possible to compare the six days of the Creation as described in the Bible, plus an extra day of rest on God’s Sabbath, with this verse from Sura Al A’raf (7: 54).

إِنَّ رَبَّكُمُ اللهُ الَّذِي خَلَقَ السَّمَاوَاتِ وَالأَرْضَ فِي سِتَّةِ أَيَّامٍ

Your Lord is Allah Who created the Heavens and the Earth in six days.

We must point out straight away that modern commentators stress the interpretation of ayyam, one translation of which is ‘days’, as meaning ‘long periods’ or ‘ages’ rather than periods of twenty-four hours.

What to me appears to be of fundamental importance is that, in contrast to the narration contained in the Bible, the Holy Qur’an does not lay down a sequence for the Creation of the Earth and Heavens. It refers both to the Heavens before the Earth and the Earth before the Heavens, when it talks of the Creation in general, as in this verse of the Sura Taha (20: 4).

تَنْزِيلاً مِّمَّنْ خَلَقَ اْلأَرْضَ وَالسَّمَاوَاتِ الْعُلَى

A revelation from Him Who created the Earth and the Heavens.

In fact, the notion to be derived from the Holy Qur’an is one of a con-comitance in the celestial and terrestrial evolutions. There are also absolutely fundamental data concerning the existence of an initial gaseous mass (dukhan) which is unique and whose elements, although at first fused together (ratq) subsequently became separated (fatq). This notion is expressed in the Sura Fussilat (41: 11).

ثُمَّ اسْتَوَى إِلَى السَّمَاء وَهِيَ دُخَانٌ

And God turned to Heaven when it was smoke.

And the same is expressed in the Sura Al Anbiya’ (21: 30).

أَوَلَمْ يَرَ الَّذِينَ كَفَرُوا أَنَّ السَّمَاوَاتِ وَالْأَرْضَ كَانَتَا رَتْقًا فَفَتَقْنَاهُمَا

Do not the Unbelievers see that the Heavens and the Earth were joined together, then We clove them asunder?

The separation process resulted in the formation of multiple worlds, a notion which crops up dozens of times in the Holy Qur’an, once it has formed the first verse in the Sura Al-Fatiha (1:1).

الْحَمْدُ لِلهِ رَبِّ الْعَالَمِين

Praise be to God, the Lord of the Worlds.

All this is in perfect agreement with modern ideas on the existence of primary nebula and the process of secondary separation of the elements that had formed the initial unique mass. This separation resulted in the formation of galaxies and then, when these divided, of stars from which the planets were to be born.

Reference is also made in the Holy Qur’an to an intermediary Creation between the Heavens and the Earth, as in the Sura Al Furqan (25: 59).

الَّذِي خَلَقَ السَّمَاوَاتِ وَالْأَرْضَ وَمَا بَيْنَهُمَا

God is the One Who created the Heavens and the Earth and all that is between them.

It would seem that this intermediary Creation corresponds to the modern discovery of bridges of matter which are present outside organised astronomical systems.

This survey certainly shows us how modern data and statements in the Holy Qur’an agree on a large number of points. We have come a long way from the Biblical text with its successive phases that are totally unacceptable; especially the one placing the Creation of the Earth (on the 3rd day) before that of the Heavens (on the 4th day), when it is a known fact that our planet comes from its own star, the Sun. In such circumstances, how can we imagine that a man who drew his inspiration from the Bible could have been the author of the Holy Qur’an, and, of his own accord, have corrected the Biblical text to arrive at a general concept concerning the formation of the Universe, when this concept was not to be formed until Centuries after his death?

# Astronomy – Light and Movement

Let us now turn to the subject of Astronomy.

Whenever I describe the details the Holy Qur’an contains on certain points of astronomy to Westerners, it is unusual for someone not to reply that there is nothing special in this, considering the Arabs made important discoveries in this field long before the Europeans.

This is, in fact, a singularly mistaken idea resulting from ignorance of history. In the first place, science developed in Arabian countries at a time that was considerably after the Holy Qur’anic Revelation had occurred; in the second, the scientific knowledge prevalent at the highpoint of Islamic civilization would not have made it possible for a human being to have written statements on the Heavens comparable to those in the Holy Qur’an.

Here again, the subject is so wide that I can only provide an outline of it.

Whereas the Bible talks of the Sun and the Moon as two luminaries differing in size, the Holy Qur’an distinguishes between them by the use of different epithets: light (nur) for the Moon, torch (siraj) for the Sun. The first is an inert body which reflects light, the second a celestial formation in a state of permanent combustion, and a source of light and heat.

The word ‘star’ (najm) is accompanied by another qualifying word which indicates that it burns and consumes itself as it pierces through the shadows of the night: it is the word thakib.

In the Holy Qur’an, the Kawkab definitely seems to mean the planets which are celestial formations that reflect and do not produce light like the Sun.

Today it is known how the celestial organisation is balanced by the position of stars in a defined orbit and the interplay of gravitational forces related to their mass and speed of movement, each with its own motion. But isn't this what the Holy Qur’an describes, in terms which have only become comprehensible in our own day, when it mentions the foundation of this balance in the Sura Al Anbiya’ (21: 33)?

وَهُوَ الَّذِي خَلَقَ اللَّيْلَ وَالنَّهَارَ وَالشَّمْسَ وَالْقَمَرَ كُلٌّ فِي فَلَكٍ يَسْبَحُون

[God is] the One who created the night, the day, the Sun and the Moon. Each one is travelling in an orbit with its own motion.

The Arabic word which expresses this movement is a verb sabaha (yasbahun in the text); it carries with it the idea of a motion which comes from any moving body, be it the movement of one’s legs as one runs on the ground, or the action of swimming in water. In the case of a celestial body, one is forced to translate it in the original sense, that is, ‘to travel with one’s own motion’.

The description of the sequence of day and night would, in itself, be rather commonplace were it not for the fact that, in the Holy Qur’an, it is expressed in terms that today are highly significant. This is because it uses the verb Kawwara in the Sura Al Zumar (39: 5) to describe the way the night ‘winds’ or ‘coils’ itself about the day and the day about the night, just as, in the original meaning of the verb, a turban is wound around the head. This is a totally valid comparison; yet at the same time when the Holy Qur’an was revealed, the astronomical data necessary to draw it were unknown.

The evolution of the Heavens and the notion of a settled place for the Sun are also described. They are in agreement with highly detailed modern ideas. The Holy Qur’an also seems to have alluded to the expansion of the Universe.

There is also the conquest of space. This has been undertaken thanks to remarkable technological progress and has resulted in man’s journey to the Moon. But this surely springs to mind when we read the Sura Al Rahman (55: 33).

يَا مَعْشَرَ الْجِنِّ وَالْإِنسِ إِنِ اسْتَطَعْتُمْ أَن تَنفُذُوا مِنْ أَقْطَارِ السَّمَاوَاتِ وَالْأَرْضِ فَانفُذُوا لاَ تَنفُذُونَ إِلَّا بِسُلْطَانٍ

O assembly of jinns and men, if you can penetrate regions of the Heavens and the Earth, then penetrate them! You will not penetrate them save with (Our) Power.

This power comes from the Almighty, and the subject of the whole Sura is an invitation to recognise God’s Beneficence to man.

# The Earth

Let us now return to Earth.

Let us examine, for example, this verse in the Sura Al Zumar (39: 21).

أَلَمْ تَرَ أَنَّ اللَّهَ أَنزَلَ مِنَ السَّمَاء مَاء فَسَلَكَهُ يَنَابِيعَ فِي الْأَرْضِ ثُمَّ يُخْرِجُ بِهٖ زَرْعًا مُّخْتَلِفًا أَلْوَانُهُ

Hast Thou not seen that God sent water down from the sky and led it through sources into the ground? Then He caused sown fields of different colours to grow.

Such notions seem quite natural to us today, but we should not forget that they were not prevalent long ago. It was not until the sixteenth Century, with Bernard Palissy, that we gained the first coherent description of the water cycle. Prior to this, people talked about the theory whereby the waters of the oceans, under the effect of winds, were thrust towards the interior of the continents. They then returned to the oceans via the great abyss, which, since Plato’s time, has been called the Tartarus. In the seventeenth Century, a great thinker such as Descartes believed in it, and even in the nineteenth Century there was still talk of Aristotle’s theory, according to which water was condensed in cool mountains caverns and formed underground lakes that fed springs. Today, we know that it is the infiltration of rainwater that is responsible for this. If one compares the facts of modern hydrology with the data to be found in numerous verses of the Holy Qur’an on this subject, one cannot fail to notice the remarkable degree of agreement between the two.

In geology, a fact of recently acquired knowledge is the phenomenon of folding, which was to form the mountain ranges. The same is true of the Earth’s crust, which is like a solid shell on which we can live, while the deeper layers are hot and fluid, and thus inhospitable to any form of life. It is also known that the stability of the mountains is linked to the phenomenon of folding, for it was the folds that were to provide foundation for the reliefs that constituted the mountains.

Let us now compare modern ideas with one verse among many in the Holy Qur’an that deals with this subject. It is taken from the Sura al Naba (78: 67)

أَلَمْ نَجْعَلِ الْأَرْضَ مِهَادًا. وَالْجِبَالَ أَوْتَادًا

Have we not made the Earth an expanse and the mountains stakes?

The stakes (awtad), which are driven into the ground like those used to anchor a tent, are the deep foundations of geological folds.

Here, as in the case of other topics, the objective observer cannot fail to notice the absence of any contradiction with modern knowledge.

But more than anything else, I was struck, at first, by statements in the Holy Qur’an dealing with living things, both in the animal and vegetable kingdoms, especially with regard to reproduction.

I must once again stress the fact that it is only since modern times that scientific progress has made the content of many such verses more comprehensible to us. There are also other verses which are more easily understandable, but which conceal a biological meaning that is highly significant. This is the case of the Sura Al Anbiya’, a part of which has already been quoted:

وَجَعَلْنَا مِنَ الْمَاء كُلَّ شَيْءٍ حَيٍّ أَفَلَا يُؤْمِنُونَ

And We got every living thing out of the water. Will they then not believe![[23]](#footnote-23)

This is an affirmation of the modern idea that the origin of life is aquatic.

Progress in botany at the time of Muhammad was in no country advanced enough for it to be established as a rule that plants have both male and female parts. Nevertheless, we may read the following in the Sura Taha (20: 53).

وَأَنزَلَ مِنَ السَّمَاء مَاء فَأَخْرَجْنَا بِهِ أَزْوَاجًا مِّن نَّبَاتٍ شَتَّى

(God is the One Who) sent water down from the sky and thereby We brought forth pairs of plants each separate from the other.

Today, we know that fruit comes from plants that have sexual characteristics (even when it comes from unfertilized flowers, like bananas). In the Sura Al Ra’d (13: 3) we read:

وَمِن كُلِّ الثَّمَرَاتِ جَعَلَ فِيهَا زَوْجَيْنِ اثْنَيْنِ

And fruit of every kind He made in pairs, two and two.

Reflections on reproduction in the animal kingdom were linked to those on human reproduction. We shall examine them presently.

In the field of physiology, there is one verse which, to me, appears extremely significant: one thousand years before the discovery of the circulation of blood, and roughly thirteen Centuries before it was known what happened in the intestine to ensure that organs were nourished by the process of digestive absorption, a verse in the Holy Qur’an describes the source of the constituents of milk, in conformity with these notions.

To understand this verse, we have to know that chemical reactions occur in the intestine and that, from there, substances extracted from food pass into the bloodstream via a complex system, sometimes by way of the liver, depending on their chemical nature. The blood transports them to all the organs of the body, among which are the milk-producing mammary glands.

Without entering into detail, let us just say that, basically, there is the arrival of certain substances from the contents of the intestines into the vessels of the intestinal wall itself, and the transportation of these substances by the bloodstream.

This concept must be fully appreciated, if we are to understand this verse in the Holy Qur’an, Al Nahl (16: 66).

وَإِنَّ لَكُمْ فِي الأَنْعَامِ لَعِبْرَةً نُّسْقِيكُم مِّمَّا فِي بُطُونِهِ مِن بَيْنِ فَرْثٍ وَدَمٍ لَّبَنًا خَالِصًا سَآئِغًا لِلشَّارِبِينَ

Verily, in cattle there is a lesson for you. We give you to drink of what is inside their bodies, coming from a conjunction between the contents of the intestines and the blood, a milk, pure and pleasant for those who drink it.

# The Creation of Man

In the Holy Qur’an the subject of human reproduction leads to a multitude of statements which constitute a challenge to the embryologist seeking a human explanation to them. It was only after the birth of the basic sciences which were to contribute to our knowledge of biology, and especially after the invention of the microscope, that man was able to understand such statements. It was impossible for a man living in the early seventh Century to have expressed such ideas. There is nothing to indicate that, at this time, men in the Middle East and Arabia knew anything more about this subject than men living in Europe or anywhere else. Today, there are many Muslims with a thorough knowledge of the Holy Qur’an and natural sciences who have clearly recognised the comparisons to be made between the verses of the Holy Qur’an dealing with reproduction and human knowledge. I shall always remember the comment of an eighteen-year-old Muslim, brought up in Saudi Arabia, replying to a reference to the question of reproduction as described in the Holy Qur’an. Pointing to it, the said, ‘But this book provides us with all the essential information on the subject. When I was at school they used the Holy Qur’an to explain to me how children were born; your books on sex-education are a bit late on the scene!’

It is on this point in particular, that a comparison between the beliefs current at the time of the Holy Qur’an, that were full of superstitions and myths, and the contents of the Holy Qur’an and modern data, leaves us amazed at the degree of concordance between the latter and the absence of any reference in the Holy Qur’an to the mistaken ideas that were prevalent at the time.

Let us now isolate, from all these verses, precise ideas concerning the complexity of the fertilizing liquid and the fact that an infinitely small quantity is required to ensure fertilization, its ‘quintessence’ – if I may so translate the Arabic word ‘sulala’.

The implantation of the egg in the female genital organ is perfectly described in several verses by the word ‘Alaq which is also the title of the Sura in which it appears:

خَلَقَ الْإِنسَانَ مِنْ عَلَقٍ

God fashioned man from something which clings.[[24]](#footnote-24)

I do not think there is any reasonable translation of the word ‘Alaq other than to use its original sense.

The evolution of the embryo inside the uterus is only briefly described, but the description is accurate, because the simple words referring to it correspond exactly to fundamental stages in its growth. This is what we read in a verse from the Sura Al Mu’minun (23: 14).

ثُمَّ خَلَقْنَا النُّطْفَةَ عَلَقَةً فَخَلَقْنَا الْعَلَقَةَ مُضْغَةً فَخَلَقْنَا الْمُضْغَةَ عِظَامًا فَكَسَوْنَا

الْعِظَامَ لَحْمًا ثُمَّ أَنشَأْنَاهُ خَلْقًا آخَرَ فَتَبَارَكَ اللَّهُ أَحْسَنُ الْخَالِقِينَ

Then We made the seed a clot, then We made the clot a lump of flesh, then We made (in) the lump of flesh bones, then We clothed the bones with flesh, then We caused it to grow into another creation, so blessed be Allah, the best of the creators.

We fashioned the thing which clings into a chewed lump of flesh and We fashioned the chewed flesh into bones and We clothed the bones with intact flesh. Then We developed out of it another creature. So blessed be Allah, the Perfect Creator.

The term ‘chewed flesh’ (mudga) corresponds exactly to the appearance of the embryo at a certain stage in its development.

It is known that the bones develop inside this mass and that they are then covered with muscle. This is the meaning of the term ‘intact flesh’ (lahm).

The embryo passes through a stage where some parts are in proportion and others out of proportion with what is later to become the individual. Maybe this is the meaning of a verse in the Sura Al Hajj (22: 5) which reads as follows:

فَإِنَّا خَلَقْنَاكُم مِّن تُرَابٍ ثُمَّ مِن نُّطْفَةٍ ثُمَّ مِنْ عَلَقَةٍ ثُمَّ مِن مُّضْغَةٍ مُّخَلَّقَةٍ وَغَيْرِ مُخَلَّقَةٍ

We created you out of dust, then out of sperm, then We fashioned him into something which clings into a little lump of flesh, partly formed and partly unformed.

Next, we have a reference to the appearance of the senses and viscera in the Sura Al Sajda (32: 9).

وَجَعَلَ لَكُمُ السَّمْعَ وَالْأَبْصَارَ وَالْأَفْئِدَةَ

(God) appointed for you the senses of hearing, sight and the viscera.

Nothing here contradicts today’s data and furthermore, none of the mistaken ideas of the time have crept into the Holy Qur’an.

# Holy Qu’ran and Bible

We have now come to the last subject: it is the confrontation, with modern knowledge, of passages in the Holy Qur’an that are also referred to in the Bible.

We have already caught a glimpse of the problem when talking of Creation. Earlier I stressed the perfect agreement between modern knowledge and verses in the Holy Qur’an, and pointed out that the Biblical narration contained statements that were scientifically unacceptable. This is hardly surprising when we know that the great narration of Creation contained in the Bible was the work of priests living in the sixth Century B.C, hence the term ‘Sacerdotal’ narration. This seems mainly to have been conceived as the theme of a preaching designed to exhort people to observe the Sabbath. The narration was constructed with a definite end in view, and as Father de Vaux (a former head of the Biblical School of Jerusalem) has noted, this end was essentially legalist in character.

The Bible also contains a much shorter and older narration of the Creation, the so-called ‘Yahvist’ version, which approaches the subject from a completely different angle.

They are both taken from Genesis, the first book of the Pentateuch or Taurah: Moses is supposed to have been its author, but the text we have today has, as we know, undergone many changes.

The Sacerdotal narration of Genesis is famous for its whimsical genealogies, that go back to Adam, and which nobody takes very seriously. Nevertheless, such Gospel authors as Matthew and Luke have reproduced them, more or less verbatim, in their genealogies of Jesus. Matthew goes back as far as Abraham and Luke to Adam. All these writings are scientifically unacceptable, because they set a figure on the age of the world and the time man appeared on Earth, which is most definitely out of keeping with what has today been established with certainty. The Holy Qur’an, on the other hand, is completely free of data of this kind.

Earlier on, we also noted how perfectly the Holy Qur’an agrees with general, modern ideas on the formation of the Universe, whereas the Biblical narration stands in contradiction to them; the allegory of the primordial waters is hardly tenable, nor is the creation of light on the first day, before the creation of the stars which produce this light; the existence of an evening and a morning before the creation of the Earth; the creation of the Earth on the third day before that of the Sun on the fourth; the appearance of beasts of the Earth on the sixth day after the appearance of the birds of the air on the fifth day, although the former came first: all these statements are the result of beliefs prevalent at the time this text was written and do not have any other meaning.

As for the genealogies contained in the Bible, which form the basis of the Jewish calendar and assert that today the world is 5738 years old, these are hardly admissible either. Our solar system may be over 4½ billion years old, and the appearance on Earth of man, as we know him today, may be estimated in tens of thousands of years, if not more.

It is absolutely essential, therefore, to note that the Holy Qur’an does not contain any such indications as to date, and that these are specific to the Biblical text.

There is a second, highly significant, subject of comparison between the Bible and the Holy Qur’an: that is the Flood. In fact, the Biblical narration is a fusion of two descriptions in which events are related differently. The Bible speaks of a universal flood and places it roughly 300 years before Abraham. According to what we know of Abraham, this would imply a universal cataclysm around the twenty-first or twenty-second Century B.C. This would be untenable, in view of historical date.

How can we accept the idea that, in the twenty-first or twenty-second Century B.C, all civilization was wiped off the face of the Earth by a universal cataclysm, when we know that this period corresponds, for example, to the one preceding the Middle Kingdom in Egypt, at roughly the date of the first intermediary period before the eleventh dynasty?

None of the preceding statements is acceptable according to modern knowledge.

From this point of view, we can measure the enormous gap separating the Bible from the Holy Qur’an.

In contrast to the Bible, the narration contained in the Holy Qur’an deals with a cataclysm that is limited to Noah’s people. They were punished for their sins, as were other ungodly peoples. The Holy Qur’an does not locate the cataclysm in time. There are absolutely no historical or archaeological objections to the narration in the Holy Qur’an.

A third point of comparison, which is extremely significant, is the story of Moses, and especially the Exodus from Egypt of the Hebrews enslaved to the Pharaoh. Here I can only give a highly compressed account of the study of this subject that appears in my book. I have noted the points where the Biblical and Holy Qur’anic narrations agree and disagree, and for some details, I have found points where the two texts complement each other in a very useful way. Among the many hypotheses concerning the position occupied by the Exodus in the history of the Pharaohs, I have concluded that the most likely is the theory which makes Merneptah, Rameses II’s successor, the Pharaoh of the Exodus. The confrontation of the date contained in the Scriptures with archaeological evidence speaks strongly in favour of this hypothesis. I am pleased to be able to say that the Biblical narration contributes weighty evidence leading us to situate Moses in the history of the Pharaohs: Moses was born during the reign of Rameses II. Biblical data are therefore of considerable historical value in the story of Moses.

The Medical study of the mummy of Merneptah has yielded further useful information on the possible causes of this Pharaoh’s death.

The fact that we today possess the mummy of this Pharaoh, which to be exact, were discovered in 1898, is one of paramount importance. The Bible records that it was engulfed in the sea, but does not give any details as to what subsequently became of the body. The Holy Qur’an, in the Sura Yunus, notes that the body of the Pharaoh, who was to be damned, would be saved from the waters. Sura Yunus (10: 92)

فَالْيَوْمَ نُنَجِّيكَ بِبَدَنِكَ لِتَكُونَ لِمَنْ خَلْفَكَ آيَةً وَإِنَّ كَثِيرًا مِّنَ النَّاسِ عَنْ آيَاتِنَا لَغَافِلُونَ

So this day We shall save your (dead), body that you may be a sign for those who come after you! And verily, many among mankind are heedless of Our signs.

A medical examination of this mummy, has moreover, shown that the body could not have stayed in the water for long, because it does not show signs of deterioration due to prolonged submersion.

Here again, the confrontation of the narration in the Holy Qur’an with the date provided by modern knowledge does not give rise to the slightest objection from a scientific point of view.

The Old Testament constitutes a collection of literary works produced in the course of roughly nine Centuries and which have undergone many alterations. The part played by man in the actual composition of texts of the Bible is quite considerable.

The Holy Qur’anic Revelation has a history that is radically different. From the moment it was first communicated to man, it was learnt by heart and written down during Muhammad’s own lifetime. It is thanks to this that the Holy Qur’an does not pose any problem of authenticity.

A totally objective examination of it, in the light of modern knowledge, leads us to recognise the agreement between the two, as has already been noted on repeated occasions. It makes us deem it quite unthinkable for a man of Muhammad’s time to have been the author of such statements, on account of the state of knowledge in his day. Such considerations are part of what gives the Holy Qur’anic Revelation its unique place, and forces the impartial scientist to admit his inability to provide an explanation which calls solely upon materialistic reasoning.

1. This is the revised version of Kaukab Ali Mirza’s translation. [↑](#footnote-ref-1)
2. History of the Arabs by Philip K. Hitti, 4th Edition, Macmillan & Co. Limited, London p. 166 [↑](#footnote-ref-2)
3. A Short History of the World by H.G. Wells, Watts & Co, London, England, p. 97 [↑](#footnote-ref-3)
4. A Short History of the World by H.G. Wells, p.98 [↑](#footnote-ref-4)
5. History of the Arabs by Hitti, p. 307 [↑](#footnote-ref-5)
6. Ibid. 310 [↑](#footnote-ref-6)
7. Ibid. p. 311 [↑](#footnote-ref-7)
8. History of the Arabs by Hitti, p. 312 [↑](#footnote-ref-8)
9. History of the Arabs by Hitti, p. 308 [↑](#footnote-ref-9)
10. Tasdir-e-Wur’an, by Abul Hasan Ali Ibrahim Qommi [↑](#footnote-ref-10)
11. History of the Arabs, by Hitti p. 303 [↑](#footnote-ref-11)
12. Managib Shahr Ashub, vol. VI, p. 238 [↑](#footnote-ref-12)
13. The History of Science, by Spangenburg & Moser Vol. 1, p. 37 [↑](#footnote-ref-13)
14. The History of Science, by Spangenburg & Moser Vol. 1, p. 16 [↑](#footnote-ref-14)
15. The History of Science, by Spangenburg & Moser Vol. 2, p. 61 [↑](#footnote-ref-15)
16. The History of Science, by Spangenburg & Moser Vol. 2, p. 55 [↑](#footnote-ref-16)
17. The History of Science, by Spangenburg & Moser Vol. 2, p. xii [↑](#footnote-ref-17)
18. The History of Science, by Spangenburg & Moser Vol. 3, p. 57 [↑](#footnote-ref-18)
19. The History of Science, by Spangenburg & Moser Vol. 2, p. 55 [↑](#footnote-ref-19)
20. The History of Science, by Spangenburg & Moser Vol. 1, pg. 59 [↑](#footnote-ref-20)
21. Note: In the September 1973 issue of “Life and Knowledge Magazine”, which is published in Paris, an article has appeared under the heading: “The world of Anti Matter.” In this article the writer has predicted the production of light by combining one atom of matter with one atom of anti-matter. [↑](#footnote-ref-21)
22. The History of Science, by Spangenburg & Moser Vol. 4, p. 33 [↑](#footnote-ref-22)
23. Holy Quran, 21:30 [↑](#footnote-ref-23)
24. Holy Quran, 96:2 [↑](#footnote-ref-24)