Imam Ja'far al-Sadiq's Contribution to the Sciences

Below are extracts from the book “The Great Muslim Scientist and Philosopher - Imam Jafar Ibn Mohammed As-Sadiq (a.s.)” This book is a translation of “Maghze Mutafakkir Jehan Shia”, the famous Persian book, which has been published four times in Tehran. The Persian book is itself a translation from a French thesis published by The Research Committee of Strasbourg, France, about the contributions made by Imam Jafar as-Sadiq (a.s.) to science, philosophy, literature and irfan (gnosticism). ‘Kaukab Ali Mirza’ did the English translation from Persian Members of this research committee have done a wonderful job and deserve gratitude from all those who love the Imam. However, these learned scholars failed to find worldly sources of the Imam’s knowledge and therefore indulged in wild speculations and guesswork to conclude on how a human being could know the kind of knowledge and revelations that the Imam had said during his life, 1400 years ago.

Birth and early childhood :

Imam Jafar as-Sadiq was born in Medina on the 17 of Rabi ul-Awwal in the year of 82 Hijra. His father was the 5th Imam Mohammed Baqar (a) and his mother was Umme Farwa. It is said that Jafar as-Sadiq was born circumcised.

Contrary to the Western belief, the Shias firmly believe that Imam Jafar as-Sadiq had Ilm-e-Ladunni or ‘God given Knowledge’. The Shias believe that a man’s subconscious mind is quite different from his conscious mind. It is the treasure house of knowledge of mankind and of the world. Modern science lends support to this theory. Biological studies have gradually proved that every group of cells in the human body knows whatever is knowable from the beginning of the world till today. The Shias contend that when someone is chosen as a Prophet or as an Imam, the curtain which hangs between the conscious and subconscious mind, is lifted and he can make use of the knowledge which is stored in his subconscious mind.

Saviour of Shi’ism :

When Imam Jafar as-Sadiq was still in his infancy some people following the example of the Christians spread the belief that the Holy Prophet, Ali ibn Abi Talib and the Imams had two natures - the nature of man and the nature of God. They were partly human and partly divine. This belief posed a great danger to their sect. The Imam fought against this thought and saved Shi’ism from disintegration. He realised that it would create differences, split the people into

factions, weaken the Shia movement and finally destroy it totally.

The Imam knew the history of the Christians. He knew the origin of the Orthodox and Catholic churches and the main cause of differences among Christians and their division into so many sects. In reply to those who propagated that idea, he said that all of them were human beings and had no essence or elements of God in them. But they were God's most favoured servants and were chosen by Him to lead and guide mankind. He announced that anyone who believed or confessed that they had an essence of God in them will be believing in many gods and would not remain a muwahid (monotheist). They would become a mushrik (polytheist).

Another great danger threatening Islam was Monasticism which the Muslims wanted to adopt from the Christians. The Imam fought against that tendency and saved Muslims from a great catastrophe. In the first half of the 2nd century Hijra, many Muslim sects were inclined to borrow Monasticism from the Christians and introduce it in Islam. They believed that one should give up worldly life and spend his time in seclusion and prayers. The leaders of those sects had arranged some solitary places where they and their followers could go and spend their lives in prayers. Some of them said that in Islam there was nothing better than Salaat (Namaaz), while others said that fasting was better than prayers and if someone had withdrawn from the world he should fast everyday throughout his life and think of nothing but Allah. Shias also, like others, were also attracted to Monasticism. This philosophy appealed to those who did not want to work and earn their own living. At the beginning of the 2nd century Hijra Muslims were attracted not only to Monasticism, but they also wanted to follow another Christian practice which was Baptism.

The Imam opposed Baptism among Muslims just as he had opposed Monasticism. He told the Muslims : "We have customs which were practised by non-Muslims before Islam, but the Prophet of Allah approved them and thus they became part of Muslim customs and traditions. Although the Holy Quran has praised and exalted Christ and him mother Mary, it is not permissible for us to follow Christian customs and traditions."

Another Christian practice, which was being followed by the Muslims, was celibacy. Considering it as a means of purification of the soul many Muslims did not marry. Addressing the Muslims, the Imam said :

" Do not follow the example of Christians. Celibacy is against the Commandments of Allah and tradition of the Holy Prophet Muhammad (s). Not only it hurts a man intellectually and spiritually, it endangers the Muslim nation as a whole. It would reduce the number of Muslims. If celibacy was useful, the Holy Prophet of Allah would not have married at all. Since our Prophet himself married, it is the duty of every Muslim to follow his example and get married

so that he may save himself from intellectual and spiritual degeneration and also help increase the Muslim population."

Imam Jafar as-Sadiq (a.s.) and abu Shakir

Jafar as-Sadiq (A.S.) was one of the most patient and tolerant teachers of his time. He used to take his classes every day. After his lectures he would listen and reply to the objections of his critics. He had asked his critics, who attended his classes, not to interrupt him during his lectures. They were quite free to ask him any question or raise any objection after the classes were over. 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 Imam Jafar as-Sadiq. 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 or 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. I have heard that there is an idol in India, which is hidden behind a curtain and is not allowed to be seen by the Hindu devotees. The custodians of the idol say that it is out of mercy that their god does not appear before them, because whoever casts his eyes on it, would instantly die."

"Your Allah is also like the veiled god of the Hindus. It is out of His mercy that He does not appear before us. If he does, we shall surely 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 see 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 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 know 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, you have created by your imagination. You deceive innocent people by saying that your imaginary Allah has created the universe, but I do not deceive anyone. No one created the universe. There was no need of any god to create it. It came by itself. God cannot create anything. He is himself our creation. I created him by my hand and you by your imagination."

Imam Jafar 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, the Imam 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." Imam Jafar as-Sadiq (A.S.) said: "I would like to start with the last part of your speech. Your accusations that I want money, position and a comfortable life would have been justified if I was 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 will have for dinner and how I live." "Abu Shakir, if I wanted to acquire wealth and have a good life, as you say, I was not obliged to teach and preach to 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 recognise 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 Imam Jafar as-Sadiq.

"I do not know", replied Abu Shakir.

Imam Jafar as-Sadiq said: "I am not a jeweller, but I know all about the pearls and precious stones. I also know where they come from. All jewellers must know about gems, what I know, but few of them know their sources."

"Do you know what makes a diamond shine?"

"I never was a diamond merchant, nor was my father. How can I know why diamonds shine?; replied Abu Shakir. Said the Imam: "Diamonds are obtained from the beds of rivers and streams. Rough diamonds are cut by experts. This is the cut of a diamond, which gives it its brilliance. Those who are experts in cutting diamonds are trained from the childhood in the profession of their fathers and 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 existence of Allah, because He cannot be seen. Can you see inside your own body?"

Replied Abu Shakir: "No, I cannot."

Imam Jafar as-Sadiq 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 your unseen Allah?" Imam Jafar 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." Jafar as-Sadiq 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? Imam Jafar 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."

Imam Jafar as-Sadiq 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 the Imam asked Abu Shakir whether he has seen the tiny living beings, which Allah has created in his body. Jafar as-Sadiq 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 do not 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 life time." "It is true that one who knows himself knows his 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 his finger to a huge stone he said: "Abu Shakir, do you see the stone, which is in 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 the Imam: "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 if no rain falls. The rain does not fall by itself. First the water vapours rise and gather above in the atmosphere in the form of clouds. The winds bring the clouds. Then the water vapours condense and fall down as rain drops. 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 need air also. 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 gr!ow 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 like seeds, soil, water, air, a suitable climate and above all a strong managing power, which may co-ordinate the action of these different elements. That Managing and Co-ordinating 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 realises 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 Jafar as Sadiq (A.S.) Abu Shakir burst into a peal of laughter. One of the students of Jafar as-Sadiq 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 the stones are made of water."

Jafar 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. The liquid and water are the same things."

Imam Jafar as-Sadiq replied: "There are many liquids which are not water. Milk and vinegar are liquids, but they are not water, although they have a 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 them and make them into idols. The same hard stones will turn into liquid, if they are 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 the Imam: "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 realise how you could make the idols out of stones? It was Allah, who made the stones. It was He Who created you and gave you the hands with the unique fingers, which enabled you to handle tools and chisel out the idols from the stones. Again it was He who gave you power and intelligence, which you used in 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 mountain tops 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 mountains 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 also 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 Him - 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 succour? 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 the stone, but, I think there is something inside the stone, which will help me. Moreover, I cannot help worshipping it." Imam Jafar as-Sadiq 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 Imam Jafar as-Sadiq: "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?" The Imam replied: "He is everywhere."

Abu Shakir said: "I cannot believe that a thing may be everywhere but remain unseen."

The Imam said: "Do you know that the air is everywhere but cannot be seen?"

Said Abu Shakir: "Although I cannot see the air, I can, at least, feel it when it moves. But I can neither see your Allah nor feel his presence."

Imam Jafar as-Sadiq 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 Imam Jafar as-Sadiq: "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 living. 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 the 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 titmouse (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 Chilchila (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 organised 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 disorganised 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 which comes from 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 no you and 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 for ever. Each and every law, made by Him serves some special and useful purpose.”

When the Imam concluded his discourse, Abu Shakir fell into a deep reverie as if he was greatly inspired.

Imam Jafar as-Sadiq 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 misgivings about my faith and my convictions.”

Jafar as-Sadiq remarked: “The doubt about idol worship is the beginning of the worship of Allah.”

Revelations of Imam Jafar as-Sadiq :

Imam Mohammed al-Baqar and Imam Jafar as-Sadiq 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 the Gospel truth. Thus, many of the false and fallacious theories would catch their imagination, corrupt their minds, and keep them under total darkness for centuries, which is actually what had happened in the past. For example the theory of Ptolemy that the earth is the centre of the universe and the sun, the planet and the stars rotate around it was generally accepted by the Muslims as true.

The two Imams 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 Imams (representatives of Allah on Earth) they had the knowledge of the theories of Greek philosophers and others.

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 this result of the untiring and ceaseless efforts made by the members of the Prophet’s family to bring about that golden age of knowledge. Among all the Abbasid caliphs, only al-Mamun was interested in knowledge. The rest were only interested in accumulation on wealth, worldly pleasures and satisfaction of carnal desires. A halo of glory and grandeur has

been placed round the head of Harun by the historians and story tellers. He was nothing but a tyrant and a despot.

The Abbasid caliph al-Mansur was well aware of the popularity of the Living Imam - Imam Jafar as-Sadiq (a). It is reported on the authority of Mufazzal bin Umar that al-Mansur wanted to kill the Imam. 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 under house arrest for long periods of time. He eventually poisoned him secretly. This was the end of the Medina Academy which was founded by the Imam.

To destroy the influence of the Imam in the field of Religion, al-Mansur and his successors encouraged sectarianism. Many new schools of Islamic Jurisprudence appeared in that period and were fully supported by them. Since the leaders of these new sects had the backing of the government, their ideologies spread and the number of their adherents increased. On the other hand those who followed the teachings of the Imam were systematically persecuted by the Abbasid !caliphs. However, as al-Mansur could not still 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 in to Arabic, and taught in schools and colleges. Gradually the names of Socrates, Plato, Aristotle and Ptolemy became a household name and their scientific and philosophical theories captured the imagination and dominated the thoughts of the Muslims for centuries. That scheme proved so successful that in the course of time, Muslims totally forgot about the scientific achievements of the Imam and the important discoveries made by him. As a result the world lost more than a thousand years of knowledge as the science introduced by the Imam was only discovered by common man in the 19th century onwards. And the credit of this discovery also went to the person who discovered it rec!ently. Little does the world know that they were all made known by the Imam 14 hundred years ago. Learned scholars from Europe started studying Islamic literature from the beginning of the of the 17th century.

Rotation Earth round the Sun :

At the age of 11, the Imam refuted the theory that the sun, moon and the planets rotated around the earth. He said that the sun, during its course round the earth, passes through the 12 constellations in one year and remains in each constellation for 30 days, so why does it then disappear from sight during the night. It should remain visible in each constellation for 30 days. Ptolemy** theory said 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.

** Ptolemy was a geographer and astronomer who was born in Alexandria in the 2nd century B.C. He enriched his knowledge by reading the books of great scholars of Greece in the library of Alexandria. He borrowed from Euclid, the great mathematician, the idea that the sun rotated round the earth and then developed his own theory known as the Ptolemaic System. Since then up to the 8th century BC no one refuted this theory.

Aristotle was a great thinker and philosopher. His books, Arganan and Physics, are the most precious literary treasures of mankind, but his theory that the earth is stationary and the sun and stars rotate around it, delayed the progress of the science of Astronomy and kept mankind in the darkness of ignorance for 1800 years. The Imam 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? He also announced that the earth rotated around its own axis. The great scholar Poincare who lived in the 20th century made fun of this theory. When such a scholar could refuse to believe this, how could people in the 1st and 2nd century of the Hijra believe in the theory of the Imam. 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 telescope towards the earth they observed that it was rotating slowly on its axis. Some people might say that it was only by guesswork that Imam Jafar as-Sadiq (a) said that the earth rotates on its own axis. Sometimes it happens that guesswork proves to be correct. 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 astro-physics 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 its effect.

Tragically, for reasons stated above, the real credit of discovery of the movement of the earth round the sun was given to Copernicus who was an astronomer and mathematician, in the 15th Century. The theory of the earth rotation around its own axis went to Galileo who discovered the telescope.

Theory of the Four Elements :

At the age of 12 he rejected the theory of Four Elements of Aristotle and proved that it is wrong. He remarked : “I wonder how a man like Aristotle could say that in the world there are

only four elements - Earth, Water, Fire, and Air. The Earth is not an element. It contains many elements. Each metal, which is in the earth, is an element.

For 1,000 years this theory was never refuted, and remained the corner stone of physics. Imam Jafar as-Sadiq proved that Water, Air, and Fire were also not elements, but a mixture of elements. This he said 1,100 years before the European scientists discovered that air was not an element and had separated its constituents. To derive the fact that Air is not an element, but a mixture of elements, was impossible to conclude in the Imam's age and time. He said that there are many elements in the air and that all of them are essential for breathing.

It was only in the 18th century, which was considered the golden age of science, 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. However, even then they were of the opinion that other elements do not play a part in breathing. In the middle of the 19th century scientists changed their views about the part played by other elements in breathing. By that time it was also proved that although oxygen purifies blood, it also burns combustible materials, which come in contact with it. If living beings breath pure oxygen for a long time, their breathing organs would be oxidised. Oxygen does not damage them because it is mixed with other gases. Therefore, they concluded that the presence of other gases which are in very minute quantities in the air is also essential for breathing.

Moreover, 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 settle down to the bottom and destroy animal and plant life.

At last, after more than 1000 years, the theory of Jafar as-Sadiq (a) that presence of all gases in the air is essential for breathing was proved to be correct. He was the first person to discover that oxygen produces acidity. Time did not allow him to make known to the world further such revelations, but he was indeed proved the pioneer and leader in the scientific study of oxygen.

Origin of the Universe :

The Imam's another wonderful theory is about the 'Origin of the Universe'. When modern scientists read this theory they confirm that it totally agrees with the modern theory, which has not yet become a law of physics. However, it has the unique distinction that it was enunciated

12 centuries ago. The theory read 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. This diversification was caused by the density or rarity of the atoms." The most significant point in this theory is the description of two opposite poles. The importance of this point was realised when the presence of two opposite poles was proved by modern science. Today it is an undisputed fact in atomic science and electronics. Another of his interesting theory was that the universe is not always in one and the same condition. In one periods it expands and in another it contracts.

This 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. It was in 1960 that it was observed and confirmed by astronomers that distances between our galaxy and the neighbouring galaxies are increasing. These observations have provided sufficient proof that the universe is in a state of expansion. We do not know when this expansion started. The discovery of black holes has proved his other statement that the universe sometimes contracts was also proved true. Hence the Imam's theory was proved to be correct. The Imam also stated that everything in the universe including inanimate objects, is always in motion although we may not see it. There is nothing 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, which is without motion. Motion is the essence of being. If there is no motion these is no existence. It is perpetual motion which creators life. In other words perpetual motion itself is life. If the motion stops, life would cease to exist. It is by the Will of Allah that eternal motion never stops and the life cycle continues. This eternal movement will continue till the Dooms-Day.

Jaber, his pupil once asked the Imam "How does the movement of the stars keep them from falling?"

The Imam replied : "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.

Contribution in Physics :

Imam Jafar as-Sadiq (a) 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., he could enunciate such a new and unique theory.

Contribution in Literature :

Imam Jafar as-Sadiq defined 'literature' as no one had ever denied during the past twelve centuries. He said : "Literature is the garment which one puts on what he says or writes so that it may appear more attractive." He further said that it is possible that literature may have no knowledge, but there is no knowledge without literature. Every kind of knowledge contains literature, but every kind of literature does not necessarily contain knowledge. These are indeed concise and comprehensive definitions of the relationship between knowledge and literature. The Imam was indeed the pioneer to start the literary age. If he had not taken the first step and given encouragement to scientists and men of letters, there would have been no literary awakening and no Renaissance of knowledge.

Composition of the Human Body :

The Imam said that while all human beings were made from the earth, which was a known fact, he also said that whatever is in the earth is also in the human body, but all elements are not in the same proportion. Four elements are in very large quantity, eight elements in small quantities and eight elements in minute quantities. This theory was proved to be correct as late as the 18th century with the dissection of the human body. Results of these analysis show that the ratio of the major elements in human bodies is the same throughout the world as Imam Jafar as-Sadiq had said. 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 Io!dine.

Discovery of Hydrogen :

According to the Western world, the greatest miracle of the Imam was his revelation of the presence of oxygen in the air. The western world admit now that the Imam discovered this twelve and a half centuries ago. Imam Baqar had said about the presence of hydrogen in water and that water can be turned into fire, as hydrogen was a highly inflammable gas. The discovery of these two gases depended upon their separation from air and water. Separation of hydrogen from water was more difficult that separation of oxygen from air. Pure oxygen is available in the air, but pure hydrogen is not available anywhere. Hence hydrogen could not be obtained till sufficient power was developed and water was hydrolysed. The world amazes as to how both our Imams could reveal the presence of hydrogen in air which was a colourless, odourless and tasteless gas and does not exist freely in nature. They could not have identifi!ed 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. After many years of research he was able to hydrolyse water and obtain hydrogen gas. He was also able to confirm that hydrogen gas was highly inflammable as a result of a freakish accident that he had while doing his experiments, which resulted in his house catching fire. It was eventually Lavoisier, the French chemist, who gave the name of hydrogen to this gas. The Imams knew such secrets but revealed only to the extend that would be useful to the world, hence the secret of how hydrogen could be separated from water without the use of electricity was never made known to common man. It has been proved that this discovery by Man has not done any good to mankind. On the contrary, it has led to the production f the hydrogen bomb, which is threatening to annihilate the human race. It was better that this instrument of death, destruction and devastation was not invented and manufactured at all so that mankind would be saved from the impending catastrophe.

Theory of Light :

Another great contribution to science of Imam Jafar as-Sadiq 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 the reason why we do not see distant objects clearly. If all the rays of light which 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 3000 zirah (one zirah is 40 inches) entered our eyes we would see them grazing at a distance of only 60 zirah ie. All these objects would look 50 times nearer to us. This theory spread far and wide through

his students and reached Europe too.

It was this theory, which helped Lippershey of Flanders to make his first binoculars in 1608. Galileo made use of this binoculars and invented his telescope in 1610. If the Imam had not formulated this theory of light, binoculars and telescopes would not have been invented and made and Galileo could not have confirmed through visual observations the theories of Copernicus and Kelper that all planets including the earth rotate round the sun. When Galileo was asked why his telescope made heavenly bodies look so near that they could see the mountains of the moon, he repeated the words of Imam Jafar as-Sadiq and said : "This telescope collects all the rays of light coming from the heavenly bodies. When all the rays of light coming from the heavenly bodies 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." Before the time of the Imam, it was believed that light from our eyes falls upon different objects so that they could be seen. He was the first to have said that " the rays of the 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 would be able to see them in the darkness also." The Imam 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. This is in harmony to the modern theory of light. The Imam had once said during the course of his lectures that a powerful beam of light could 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 this statement, he laid the foundation of the theory of the laser.

Theory of transfer of Disease by Rays :

Imam Jafar as-Sadiq 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. This 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. No one before the Imam, had ever said that diseases were also transferred from one person to the 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.

Theory of Matter and Anti-Matter :

One of the unique theories of Imam Jafar as-Sadiq is that everything except Allah has its

opposites, but this does not result in a conflict, otherwise the whole universe would be destroyed. This is the theory of matter and anti-matter. 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 have concluded 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. Professor Alfven is of the opinion that there is no other source in the universe, which can generate so much energy as quasars, except explosion of matter with anti-matter.

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.

Theory of the Light of the Stars :

Imam Jafar as-Sadiq 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, many people during the Imam's 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 later, it was proved that what he 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 9000 million light years from the earth. The first such quasar was discovered in 1927. Another important theory was that there are many worlds other than our own, that we cannot even count them. Their number is only in the knowledge of Allah (swt). Just as we have living beings on this planet, there are living beings on many other planets in the universe where conditions are suitable.

Our telescopes are even today not powerful enough to enable us to see what is beyond the quasars. Therefore we do not know how vast the universe is. It can only be surmised that in the universe there would be millions and 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 Imam Jafar as-Sadiq has said, that, no one except Allah (swt) knows the number of large and small worlds.

Pollution of Environment :

Imam Jafar as-Sadiq has said that we should not pollute our 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. This was not a theory but a scientific fact which cannot be refuted. It is estimated that if air pollution increases at the present rate for 50 years more, 50% of plankton will die and the quantity of oxygen in the air would be reduced by the same proportion.

The rich nation of Japan ignored the advice of Imam Jafar as-Sadiq and polluted its environment and suffered the consequences. After World War II, in which Japan was defeated, the average yearly income of a Japanese worker was only US$ 30. Today it is US$500. In the production of ships, radios, TVs, tape-recorders, computers, rayon cloth etc, it has given birth to numerous diseases which were never known to have been existed. A new and dangerous disease has appeared recently in Japan. This disease is called Eta Eta because the patients cry Eta Eta in pain. The first symptom of the disease is severe and unbearable pain in the bones. After sometime, the bones become so brittle that they break into pieces like glass. The cause of this disease is accumulation of large quantities of cadmium in the body by drinking water and eating agricultural products which have been contaminated by that element. Another new disease has appeared on Kyushu in Japan. Those who suffer form it lo!se their eyesight and the tissues of their bodies wither away. As a result, they cannot move their limbs. If they are not treated properly they gradually die. The cause of the disease is accumulation of mercury in the body through polluted water and food. From the time of Hippocrates, the famous Greek physician, till today about 40,000 kinds of disease have been diagnosed, their symptoms recorded and treatment prescribed, but the diseases, which have appeared in Japan due to the pollution of their environment are unknown to the science of medicine.

Science and Philosophy :

Imam Jafar as-Sadiq was not only a religious leader, but a scientist, a philosopher and a man of letters. He used to teach theology, philosopher, science and literature. He was the first scholar in the world to have separated science and philosophy. No one before him paid any attention to the important point that they are two different subjects. He remarked, while pointing out the difference between the two which shocked many philosophers. They can be divided in two parts.

The first part read as follows : “Science and philosophy are two different subjects. Science gives us definite and exact results even if they are small and insignificant. But philosophy

serves no practical purpose and gives no useful results." The second part read as follows : "However, it is beyond the scope of science to discover the ultimate truth; but it is within the domain of philosophy to do that."

As the Imam was a religious leader he already knew the truth through religion and did not want to find it through philosophy. However, it ws his firm conviction that philosophy would solve many problems. He was therefore more interested in philosophy than in science because it helped to recognise the Creator.

Imam Jafar as-Sadiq was not a physician by profession, but he introduced and formulated methods of diagnosis and treatment in the field of medicine. Western scholars find it hard to believe how he could have introduced certain diagnosis in that age and time. Good Advice for Mothers :

Imam Jafar as-Sadiq has advised mothers that they should put their new born babies to sleep on their left side. 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 instructions. Mothers may take a turn while sleeping and crush the baby to death. 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 founded the Cornell University in NYK. In this university he set up under the department of medicine, an institute for the Research on New Born and Suckling Babies. A research scholar of this institute who travelled to different parts of the world, observed that mothers in every country carried their babies in the left arms. Doctors in this institute observed that babies who are put to sleep on the left side of their mothers sleep more soundly and peacefully but those who are put on the right side, wake up every now and then and cry. It was reported that for the first few days after their birth, babies would have no rest at all, if they are not on the left side of their mothers.

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 made of different mammals to find out the reaction of the foetus. All experiments showed that whenever the heart of the mother stopped beating, the foetus 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 and death. They depend so much upon the heartbeat that even after they are born, they become restless, if they do not hear it. A new-born 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. If the Cornell University had not been established and the research work on babies was not done, no one would ever haverealised the scientific importance of the advice of the Imam that mothers should put their babies to sleep on their left side. Imam Jafar as-Sadiq was ahead of his time by 1,100 years. Indeed he had access to Ilm Ladunni (divine knowledge).