

THE INFLUENCE OF ANCIENT SCIENCES INCLUDING THOSE OF SINDH ON AL RAZI, THE GREAT PERSIAN SCIENTIST

**By
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Razi, one of the greatest scientists which Persian has produced, lived at Baghdad under the Abbasids during the later part of the 9th and the earlier part of the 10th centuries. He was a medical practitioner, botanist, chemist, logician and a philosopher. An assessment of the sciences as existing during his times is necessary in order to ascertain his role and his position as a scientist. Science does not develop over night as its development is a slow process in which knowledge is added bit by bit. The later scientists always drawn on the experience of their predecessors. A good example to quote would be pottery. It did not develop over night. It evolved in pre-historic Iran over a period of six to seven hundred years. The initial pottery had black soot deposits in it due to low temperature, improper burning and circulation in hearths. It took about 500 years to improve the health and the air circulations resulting in higher temperature and giving it mature natural red color. The potter's wheel was a subsequent development. This simple example illustrates how slow the evaluation of the various sciences was in the ancient world.

Razi drew on the past experience. Let us see how science existed during his times as inherited from prehistoric days.

In the ancient world there were three major cultures i.e., the Egyptian, the Sumerian and the Indus all having developed in the valleys of the famous rivers namely the Nile, the Euphrates, the Tigris and the Indus. They developed in isolation almost cut off from each other, and with very little direct contacts or exchange of the ideas. The most important of these three was the Egyptian civilization. It was the oldest dating back to 3100 BC, and it survived for a period of 2500 years without interruption. Its 25 Dynasties ruled the entire Egyptian (Upper and Lower) Empire during these years.

To a common Pakistan, the Egyptian masses were ignorant and superstitious. Their kings were tyrants, ignorant and inhuman, who exploited hundreds of thousands of slaves to erect the ugly looking pyramids over looking the desert sands and in which their bodies were interned. To him the Taj Mahal, however, is one of the greatest wonders of the world, a glory of the past and a master-piece of art.

The fact is that both these are tombs of kings. The Taj Mahal has more art and less sciences in it, while opposite is true of the Pyramids. The Pyramid of Cheops, built 4550 years ago gives an insight into the extent of science, which the ancient Egyptians knew and utilized. It lies East to West and its deviation from East is only 1/20th of degree, which can be read and assessed with instruments developed only in recent centuries. The

base on which the Pyramid is erected is perfectly horizontal and is laid with a precision that cannot be achieved even by the present field leveling instruments used for agriculture. This is indeed amazing when it is found that the area of the base is more than 12 acres. The King's chamber has a small hole which receives direct light of the North Polar Star at night. This small hole having a diameter of less than ½ centimeter points to the North Polar Star through 400 feet thick blocks of lime stone. The Pyramid is also a perfect square having each side of 740 feet deviating only by a few inches.

Under the Pharaohs, medical science had considerably developed and formed the basic source for the Grecian medical science, though at times it was mixed up with spells and rituals to remind every body of the powerful influence of the priests who were the real power behind the crown. Their religion continued to develop on the same lines and in the same direction as there are only slight variations in their gods and in their belief in the life hereafter under such strict religious dogmas. Abundance of food supplies and stability of the Government ensured the power of the priestly class and science progressively evolved. It was in 671 BC that the Assyrians conquered Egypt but were over-powered by the Persians a century and a half later in 525 BC. The Persian domination came to an end in 404 BC, when the 28th Dynasty of the weak Pharaohs established their rule. This weak dynasty was replaced by the Greeks under Alexander the Great in 332 BC. After Alexander's death, the Ptolemy's ruled Egypt.

The Egyptians under the Pharaohs were well-versed in the sciences of the times and the later developments in science came up under the Greeks. The Egyptian works were collected, translated and preserved and the Library of Alexandria was established by the Ptolemy's. This Library expanded considerably during the succeeding centuries. No traveler carrying books was allowed to pass through Alexandria unless these were copied by the Government scribes and returned to the traveler. The process continued during the Greek occupation. Cleopatra, the last of the Ptolemy's herself intrigued with Antonius to get back 200,000 books taken away by Caesar. The Library kept flourishing till 395 AD. It was, however, burnt in 646 AD, when the Arabs captured Alexandria. The plea given was that if the books tallied with the Holy Quran they were superfluous, and if they did not tally they were pernicious. The Arab version is that during the siege, the Christians burnt it. The Egyptian script was no longer readable. The language had already become extinct and the loss to the humanity it's burning of 700,000 Greek works was greater than that caused by Halaku's burning of the famous Library at Baghdad. The Egyptian sciences survived for a few centuries except what had been translated by the Syrians, Persians and Greeks and through other contacts and had been preserved elsewhere in writings or in practice in the Byzantine Roman territories.

Simultaneously with the Egyptians, another civilization gradually arose in Mesopotamia called the Sumerian culture. The Sumerians are associated with UR and later on with Babylonia from the end of the 3rd millennium BC. There they flourished for the next 1000 years. The Hittites rose around 1595 BC, sacked Babylonia but deserted it immediately. The Babylonians continued to rule it till the rise of the Assyrians in 1115 BC. The Assyrians were from Northern Iraq and not really alien to the Sumerian – Assyrian culture. Like the Egyptians, the Sumerian and the Assyrian culture of Mesopotamia at

UR and Babylonia could be considered as continuous and un-interrupted till, like Egypt, the Achaemenian Persians sacked them in 538 BC. The Achaemenian rule continued for another two centuries till Alexander conquered it in 331 BC.

Here mention may also be made of the rise of the Hittites occupying part of Asia Minor presently representing Northern Syria and a part of Southern Turkey. The Hittites rose around 1740 BC and their fall came around 1200 BC. The Hittites were sacked by the Assyrians. The latter were initially influenced by the Mesopotamian science and culture and it is just an extension of it. A little later in the south the Hittites helped the Mittannians to rise by having their princes married to the Pharaoh. There was an exchange of culture between the Egyptians and the Hittites. These two cultures were an indirect outcome of the Sumerians and Assyrian culture. They have special place in the advancement of sciences. The Sumerians and the Assyrians were as advanced as the Egyptians. In the case of Art they were more advanced than even the Egyptians. They solved some of the complicated problems of Arithmetic which later were solved only with the help of Algebra.

Indus Valley Culture.

The Indus Valley was the youngest of the three cultures. Mohenjo Daro and Harappa came into existence around 2500 BC. Even if the Amri and Kot Diji cultures are considered as predecessors of the Harappans, this only advances the Indus Civilization to about 4800 years back but still keeps it younger than the Egyptian and the Sumerian cultures by 3 to 4 centuries. The Harappan downfall came around 1500 BC at the hands of the Jhukar and Cemetery H people. Aryans adopted much from the Harappans. The Aryans god Siva (Timurti) probably originated from the three faced beast god of Mohenjo Daro. The Aryans adopted the decimal system from Mohenjo Daro for higher weights as well as lengths, though the binary system was used for lower denominations, which was again adopted by the Aryans for money circulation a millennium later. Besides Siva, the goddess Kali and Rashki are considered of the Harappan origin.

It is generally believed that the Jhukar, and Cemetery-H people drove out the Indus people of the Harappan areas. This is hardly true. It is certain that many tribes of Sindh mostly associated with river navigation, fishing and rearing of camels as well as Brohi Hill Tribes of Sindh and Kalat belong to the Mohenjo Daro people. Thus science and cultures of the Indus people were absorbed by the conquering Aryans.

Here, mention may also be made of the important cultures of Crete and Greece. In the 3rd millennium B.C., the Neolithic settlements were found in both these civilizations, but Crete rose to the height of its culture at the time when the Jhukar people moved towards the Indus by 1700 BC. They were definitely influenced by the Babylonians. An important event that took place during the Minoan domination of Crete was the development of Linear-A script, which later on further developed after 1500 BC into Linear-B script. Its repercussions soon were felt in Israel where the present Hebrew alphabets were first evolved. The Hebrew alphabets in return helped in the development of the Modern Greek alphabets. The Hebrew alphabets read as Alif, Bait, Jeem, Dal; whereas the Greek

alphabets read as Alfa, Beta, Gamma, Delta, etc. The developments continued and slowly gave rise to a new class of intelligentsia soon after 1000 BC.

These alphabets seemed to have influenced the South Asia in which Sanskrit alphabets were evolved. Like the early Hebrew and Greek alphabets it also had no vowels. These, in all the three scripts were added much later. By about 775 BC, the classical Greek writers like Homer, first appeared on the scene. In India, the Vedas were also being compiled.

It is surprising that by the beginning of the 1st BC, the three great civilizations of the ancient World had become decadent and the hilly people were coming in the forefront. Iran, which had worked as a trade route, started its gradual development in unification as a nation. The Greek successors of Crete and Minoan cultures started playing greater role in trade first with the Hittites and later on with Egypt, Assyria and Iran. Due to development of trade, Greece had contacts with most of the civilized World and by 520 BC, Athens developed a monopoly of trade with Persia, which they had evolved as World's leading power.

The center of the World civilization in this millennium shifted from the great river valleys with favorable climate conducive to the birth of magnificent civilizations like the Egyptian, the Sumero-Semites and the Harappans to the hilly people like the Assyrians, the Iranians and the Greeks. The Assyrian culture declined with the growth of the Iranian power. Cyrus of Persia became the liberator of the oppressed people of the Crescent. He conquered Mesopotamia around 538 BC. Subsequently, his son conquered Egypt in 525 BC and also conquered Gandhara. Darius conquered the lower Indus Basin consisting of the lower Punjab and Sindh in 519 BC. Thus, the three great civilizations were inherited by the Persians. They also invaded Greece and occupied parts of it between 492 BC. The Persians being fully aware of the achievements of the great cultures, gave them autonomy, respected their religion and culture, accepted their gods as their own and allowed science and local culture to flourish in the same way as they were doing under their own rulers.

The Achaeminian Persians were interested in unification of their Empire. To achieve this end they adopted Aramaic as their official language in preference to Pahalavi. There were few translators and scribes in that language with the result that it hampered the growth of scientific knowledge and literature. Over a period of two centuries some translations in science and literature from other lands were made and preserved at Persepolis. This city was burnt by Alexander the Great when he conquered Persia in 330 BC, in retaliation to the burning of Athens by the Persians 150 years earlier. This was the first great loss to humanity in the ancient World. Under Alexander, the Greeks conquered Egypt, Mesopotamia, Persia and the Indus Valley and thus took advantage of knowing the sciences, knowledge, and cultures of the three great ancient civilizations. They also inherited the scientific know how of the Hitties, Mitannious, Cretes and ancient Greeks. These along with relations with the foreign countries developed by them and the mercantile fleets built by them for navigation of the seas had made them leaders in the development of all sciences as well as war. The Achaemenian Persians at the climax of

their power had moved the Greeks from their occupied lands and had settled them on the borders of their Empire to defend it against local uprisings. All these factors gave the Greeks access to the world knowledge and wisdom and in return they produced works which dominated human minds for at least 2000 years.

The successors of the Greeks were the Romans who were in time ousted out from Europe by the Barbarians. The later Romans established another Empire at Byzantine.

The Romans made great strides in the science of war and in the field of engineering but a very little in other fields. They, however, continued preservation of Greek works on science and literature in the original Greek language.

A century before the beginning of the Christian era, the Parthians rose in Persia and slowly worked their way up to power. At one time they even defeated the Roman army (53 BC) taking 3/4th of their soldiers as prisoners. The Parthians established their Empire extending to the present Soviet Central Asia and present Pakistan.

The Parthians were replaced by the Sassanians in 208 AD and the latter continued to rule till 651 AD. Their rulers conquered the Indian Valley and the Central Asia. They were among the first Persians to help advancement of the Persian language. They were defeated by the Arabs in 636 AD, when most of the books of the Zoroastrians as well as other literature and scientific works were destroyed and lost to humanity. Khusru, (531-578 AD), the Sassanian king, sent an agent Budha to India to collect drugs. He sent for an Indian doctor to teach medicine at Susas where this doctor opened a special school. The Indian sugar was imported into Iran as a drug.

The Arabs quickly rose to power occupying more countries than any empire hitherto had. During the first century of their power, the Muslims concentrated mostly on science of water. They learnt from the Persians and the Romans (through Egypt and Byzantine), advanced machines utilized for scaling walls, flame-throwers and heavy stone-throwers. These machines were originally evolved by the Greeks, improved by the Romans and latter adopted by the Persians. It were the machines of this type which were used by the Arabs in the final conquest of Sindh. Their earlier defeats are attributable to lack of suitable war equipment.

In the early 5th century AD, the Eastern Christian Church at Alexandria developed factions. One of the Nestorians separated and made Syria as a centre of their activities. They translated Greek works on theology and philosophy into Aramaic or Syriac. This was important development to the ultimate transmission of Greek knowledge to the Arabs. In the early 6th century, the Nestorians extended their activities to Persia. The church's official language in Persia remained Syriac. By the middle of the 6th century under Khusru, a number of Greek scientific and medical works and Aristotle's logic and philosophy were translated in Syriac. The Persian city of Hira became the centre of the Nestorian learnings. Being near Baghdad, it exercised great influence on it.

The other faction of the Eastern church of Alexandria, the Monophysites, having later on developed differences with the Byzantine Empire, got away from the Byzantine Orbit and started preaching and writing in Syriac. Under Rushayan many scientific works of medicine, philosophy, theology and other sciences were translated into Syriac in the mid sixth century.

By the end of 6th century AD, the Syriac language claimed translations of a number of Greek scientific works in addition to literature of its own. The Umayyads made Damascus as the seat of their Government in 661 AD, and remained there for nearly 90 years. Syria was a Roman province and the Umayyads learnt the new science including that of war machines from the Christians, Jews and new convert Muslims who were their subjects. Part of Damascus was also occupied by Greek speaking population originating from Greece.

The Umayyad Khalifate was resented by the non-Arab Muslims specially Persians. The Abbasid revolution, in fact, was Persianization of the Arab States, Arab literature and ultimately the Muslims religion. The Abbasids shifted their capital to Baghdad, and its lay-out plan was drawn by a Jewish Engineer. The Barmakids of Marv, originally Buddhist abbots, were converted to Mazdean religion before the Muslim conquest and now were the prime-movers of this revolution. Haroon-ur-Rashid (786-806) under Barmakid's influence took keen interest in sciences. Mamoon a son of a Persian mother and married to a Persian wife was equally favorable to the Persians as well as sciences. Science became a fashion but only among the countries and not outside with general populace.

In the beginning scholars and scientists only translated Greek works. These translations were not directly from Greek to Arabic but were from Greek to Syriac or Aramaic and from them to Arabic. The technical terms used in Arabic translations are not Arabic but Aramaic or Syriac, which like Hebrew and Arabic, was a Semitic language but altogether different from both. It was only after the mid 9th century that some direct translations from Greek to Arabic were attempted.

Haroon, at the suggestion from Jaffer Bin Barmakid, collected Greek works from the Roman Empire of Byzantine. A serious study of Aristotle's works, however, was undertaken after his death. The Syriac (Aramaic) translations of Aristotle's works go back to the 5th century AD. Alexandria had become a Jewish centre since their early dispersion in 588 AD. These Jews also contributed to the Greek translations. Since the official language of the Byzantine and Syriac Christian Churches was Greek, most of the early Greek translations into Aramaic were done by these Christians. Rashyan, a Syrian Christian had translated various works of medicine and Philosophy into Syriac (Aramaic) in 536 AD. He had also translated some of Galen's books on medicine. Aaron, a Christian doctor of Byzantine, had also translated Greek medical works into Aramaic in the mid-sixth century. Syriac translations of Aristotle's works go back to the 5th century AD. Thus Aramaic produced rich scientific and other literature in Persian Gulf countries, Mesopotamia and Syria before the advent of Islam. During last 8-10 years of Haroon's

rule, Manek, a Sindhi Ved (Doctor), translated a number of Indian works of Medicine into Arabic.

In the 9th century, when direct Greek to Arabic translations were being done, Marv, the original home of the Barmakis became an important centre of Greek scholarship.

Mamoon established a “House of Wisdom” or “Dar-al-Hikmat” at Baghdad to translate Greek scientific works, with Hunyan as in charge. This institute translated a large number of Galen’s medical works. The institute suffered as Mutasim moved the capital to Samarna in 836 AD. When the capital was shifted back to Baghdad in 892 AD, Mutawakil renewed the House of Wisdom.

Direct Greek-Arabic translations were available to the medical men of Baghdad in the early 10th century, but this was not the case in the Moorish Spain where the Byzantine ruler had sent a Greek work as a present to the Cardova Khalifh in 951 Ad. There being not a single person in the Moorish Kingdom knowing this language, Nicholas, at the request of the Khalifh, was sent from Constantinople to Cordova to teach Greek language and translate this botanical work. Nicholas was then asked to open a school for teaching and translation of the Greek works in Cardova. In 740 AD, the Arabs first translated Ptolemy’s Geography then Almagest to understand about the countries they had conquered. Under the Umayyys, It was only poetry and literature which were translated form foreign languages and not sciences. It was during the Abbasid Dynasty that the Arabs translated the scientific works of the Greeks. Sciences developed in India, had not been properly transmitted to Europe, though Alexander the Great, had brought a number of Greek scientists and biologists with himself during his campaign. He had also taken some priests form India with himself and these priests were well-versed in the Indian sciences. The Arabs combined the knowledge of the Indian and Greek sciences. These works were translated and elaborate commentaries were written on them.

We have already seen the circumstances under which the knowledge of the ancient world, Egypt, Mesopotamian, Assyria, Hitties, Mattanis and Crete had been transmitted and utilized by the Greeks. Now it was Greek knowledge which found its way to Baghdad and subsequently the Arabs combined the Greek science with the Indian science to produce new treatises. The early translators of these works in Arabic were the Jews, Christians and Muslims, all of Arab origin in the same way and the great Greek works in Spain were translated into Arabic by the Jews, as well as the Muslims. Thus, it is not proper to call it as a Muslim science. It would be more appropriate to call it an Arabic science. When we think of the Persian and the Indian writers who also contributed to science at Baghdad and wrote or translated into Arabic, we have to find another name for this science.

We are interested in assessing the position of Razi as a scientist. He was a medical practitioner, botanist, logiest, philosopher, physicist and al-chemist. We have to know how much knowledge and trickled down to his times and how much he contributed on his own.

We have already reviewed the contribution of the Egyptians. Their great medical scientist was Imhotep who lived around 3000 BC and was considered a medical-god. Imhotep, son of a Royal Architect Kanofer, who had held various important posts, titles and assignments, most probably was the universal genius like Archimedes and Leonardo da Vinci. He was not only a physician but an architect, a writer, a wizard and a state man. His reputation went on increasing till he was considered as a god with a temple at Memphis. There was another medical genius of the ancient Egyptians called Thoth. He too was called a god. In addition there were different gods for individual parts of the human body. This shows that the medical science had advanced to a stage where there was a specialist for different parts of the human body. A doctor in addition to medicines, added some rituals and spells. It was really not a part of superstition, but simply acceptance of the indispensability of the priestly class to which doctors too belonged. The Egyptians used opium, castor oil, jention, etc. These are very important drugs in the Greek medicine; surgery and bandaging were also known. It was the Egyptian medical science that evolved a method of preservation of human body called mummification, a process which is now lost. This Egyptian sciences found its way to Greece through conquest. The Greeks analyzed the science, accepted the medical part and rejected spells, rites and magical components.

Mesopotamia also made great advances in medicine, but they always added astrology to their medicines. The Mesopotamians were great astrologers and were responsible for division of an hour into 60 minutes and a minute into 60 seconds. They worked out the exact length of a year which falls short of the present estimates only by 7 hours and a few minutes.

China too had developed in medicine based on Ying and Yen theories which had not traveled to Greece but in corrupted form had traveled to the Arab World.

The Greeks advanced an important medical theory called Humoral. According to them there were four elements i.e. air, earth, fire and water and similarly four properties on all things namely hot, cold, dry and moist. Any imbalance in these four caused diseases. Fever was hot and patient suffering from it had to be given cold treatment. Pneumonia was cold and hot treatment had to be given for it. Sore throat was dry and required wet treatment. Nasal trouble was moist and needed dry treatment and so on. The most famous and favorite of the Arab medical men was Galen who lived in Greece up to 146 AD and wrote 500 medical treatises. He supported the Humoral theory and in fact, strangled medical science for another 1500 years. All the Arab medicine men supported the Humoral theory. This theory was finally discarded in the 17th century AD. Against the Humoral theory was Hippocrates who died in 460 BC and wrote 70 books. He advocated experimentation, observation and description against the Humoral theory. He was discredited both by Greek and Arab medical men.

The immediate predecessor of Razi's Encyclopedia of Medicine was Hunan's (d 879 AD). Dictionary of Medicines based on more than 100 books. In addition to this Razi's contemporaries Al-Qass, a Christian, had translated Galen's works in 908 AD, and another Christian Balbaki translated Galen's Catalogues in 912-13 AD.

Razi wrote Encyclopedia of Greco-Arab Medicines (Kitab-ul-Ahwal) using the Humorly theory, Galen's writings and surprisingly also Happrocrate's. Theory and additions from the Indian medical texts. It will be more fair to call it "Greco-Indian" as the sources were Greek and Indian. Razi was chief doctor at the Baghdad hospital till his death in 923 AD. Previous to this assignment he was in charge of the Royal Hospital under the ruler Mansoor-Ibn-Ishaq. His important contribution to the new knowledge was "Study of Symptoms of Smallpox and Meastes". This is considered a mile-stone in the development of medicines and was issued as a separate treatise.

It may further be mentioned that the Greeks essentially made use of the botanical plants in the form of essence of cooked and boiled materials for medicine purpose. Aristotle, the great scholar and teacher of Alexander the Great, has also written books on botany but he firmly believed in the Humorly theories. During his expedition to Asia, Alexander took with himself a number of botanists for study of this science in foreign lands to enhance knowledge and its use in medicine. The Indian doctors on the other hand depended more on materials taken directly from the earth.

The clear-cut distinction between Greek and Indian drugs is known by their classification. The Greeks used botanical plants either by soaking them in cold water or hot water both called 'Puso' in Sindhi and 'Khesanda' in Persian, or by boiling them in hot water called 'Karho' in Sindh and 'Joshanda' in Persian. They also used moist mixtures called 'Jawarish', 'Majoon', 'Khameera' or 'Attri-Phall'. When they used the plant mixtures in the form of tablets or powder, they were termed as "Phanki" or "Sufoof" and "Goli" respectively.

The Indian Medicines on the other hand used mostly inorganic materials directly obtainable from the "Mother Earth" or botanical plants. The latter was mixed with organic material and burnt at high temperature converting organic form into inorganic. The development of metallic compounds called 'Kushta' owes its origin to the Indian medical science. Razi has to be given credit for combining the Indian and Greek drugs in his Encyclopedia. This book was translated in Latin, Byzantine, Greek, Persian and a number of other languages as "Encyclopedia of Greco-Arab Medicines".

Sindh Veds at Baghdad.

S.No.	Name of Ved or Physician
1.	Majka.
2.	Bahla.
3.	Dahan.
4.	Bak-har.
5.	Rajah.
6.	Dahar.
7.	Jbhar.

They all were predecessors of Razi and must have left considerable knowledge behind.

As regards Al-Chemy, the Arabs, like all other ancient people, were interested in chemically producing gold and did not realize that it is an element mostly inert and, therefore, cannot be produced from other compounds. They wasted their lives on experiments that resulted in the production of some new compounds which were of no importance due to the cost of their manufacture. It is also surprising that he discusses the theory of composition of matter probably based on Greek translation of a book of Democritus which he called 'Spiritual Physics' and discusses Al-Chemy in it.

As a logician Razi has depended on Aristotle and other Greek writers though in Philosophy he disagreed with Aristotle.

As a philosopher Razi, like all other Muslim philosophers of the age, was influenced by the Greek writings. The neo-Platonism of Egypt was influenced by the old Egyptian philosophy as well as the theology of Aristotle. There was a continuous strife between orthodox Muslims and liberals especially on the question whether some of the unknowns could be known without revelation. Razi belonged to the liberal school of thought and as such his philosophy was anti-religious, specially during the age he lived, but he was lucky that due to the political prestige which the Persians enjoyed in the Abbasid court, he did not meet any opposition like Ibn Rushd who was imprisoned, humiliated, and whose writings were burnt. Farabi, Ibn-Rushd and Ibn-Sina are exponents of Aristotle's theories, though Ibn-Rushd's writings were much superior and were used as basic texts in Europe up to the end of the 17th century. Unlike them, Razi was a follower of Plato and did not believe in any particular revelation and Divine laws. He believed that all reasonable men are equally able to look after their own affairs. He refuted prophecies and miracles. In his life time the Ismaili sect was openly opposed to his doctrines but he was still respected at the court. He exposed exploitation of ignorant people by religious leaders for their good.

These views in philosophy and religion of Razi are due to the influence of the writings of Brahmans as well as the Sabaeans of Harran. In any case these views are not acceptable to the orthodox.

It is not yet confirmed how Razi was converted to these views. There is evidence that a money changer of the Market of Harran named Thaib Ibn Qurra who died in 901 AD turned to writings of philosophy and became expert in Greek, Syriac and Arabic. He composed 150 works on logic, mathematics, astronomy and medicine in Arabic and another 15 works in Syriac. He was ex-communicated by the high project of harran but remained staunch in his views. He was taken to Baghdad by Muhammad son of Musa and it is here that he composed his works. Razi must have met him, read his works as both were contemporaries and writers of similar subjects. Thails, son of Abu Said, and physician to Khalifah Al Qahir. He remained Pagan like his father, worshipping in 5 temples dedicated to cause, reason, ruler of the world, form and soul. As late as 975 AD, Abu Ishaq Hila, Secretary to the Khalifah, obtained a decree granting religious tolerance to the Sebeans of Harran of whom many were in Baghdad. The acceptance of the Pagan

thoughts of the Harrans of Persia simply proves anti-Arab characteristics of Razi's period.

The only useful works of Razi were his Encyclopaedia of Greco-Arabic medicines and botany which, though defective due to Humorly theory, were utilized for services of mankind for several centuries.

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