Bhageeratha reincarnated

India is the land of Vedas. Here flourished philosophy, art, literature and science .The last one,science in India is less known to others. During the ancient period India was supreme in scientific knowledge. Innumerable scientific facts and theories spread over in philosophical and literary works. Let me take one drop from the ocean to substantiate. The concept of number-line is seen in Sankara's commentary on brhadaaranyaka upanishath. Different atmospheric layers and their varying power of refraction of light are given in the drama, sakuntalam of Kalidasa. Rising of freezing point on lowering the pressure,concept of escalator etc. are seen in Meghasandesa of kalidasa. All these are in the medium of Sanskrit. Only Sanskrit scholars can reach there. Disciples of philosophy are interested only in philosophical aspects of the grandhas. Similar is the case with literature also. For understanding the scientific aspects in these works the reader must have a scientific aptitude and scientific attitude. This is the reason why common readers nowadays are unaware of science scattered in the works of literature and philosophy. In ancient time the level of scientific awareness was high for the people. This may be the reason for including scientific principles in literature and philosophy when it becomes apt and necessary.

There were books or grandhas written specifically on various branches of science. Brhadvimanasasthram on air navigation,Golasaram on cosmology,Bodhayanasulbasuthram on mathematics,Rasaratna samuchchayam on chemistry,etc are some of them. At present we do not posses all the books. We do not have an account of them. We get the indications of lost books from the references in the existing books. After a long period of foreign invasion and rule we, the people of India got deprived of the knowledge embedded in these books. We were attracted to easy and luxurious life after the industrial revolution. We began to travel in the track of modern science, modern literature and modern philosophy. Gradually we came to the conclusion that ancient Indian knowledge is useless to our daily life. We have neglected them. Consequently they were destroyed naturally and deliberately. But few books and scholars who knew them remained. Even now the books or grandhas remaining are innumerable. Nobody can study all the books in a small discipline. Since the people were far away from Sanskrit the scholars failed to convince them the science in ancient grandhas. Thus two sets of opinion prevailed-one,the ancient Indian knowledge contains all the modern knowledge even before 5000years and the other Indian knowledge system contains only scientific bluffing and occult science. Only the scholars who can dwell into both ancient and modern knowledge systems are able to convey and convince the idea to common people who are devoid of technical Sanskrit.

In such a scenario the importance of the works of Shri C Krishnan Nampoothiri becomes high. He is well versed in technical Sanskrit literature and modern science. He has vast experience of teaching science and researching in Sanskrit scientific literature. He has gone through large number of Sanskrit books,visited many manuscript libraries and consulted with scholarly people. Considering the volume of his effort he may be called as the incarnation of Bhageeratha. He has compiled data from different grandhas or books and classified into a series called Bharatheeyasasthrachintha (Indian Scientific Thought) comprising four different groups viz.

1 Ganitham (mathematics)

2 Prapanchavijnaneeyam (cosmological studies)

3 Rasathanthram (chemistry)

4 Manovijnjaneeyem (psychology)

Since the ancient Indian science (vijnana) has been edited and classified ,Shri Krishnan nampoothiri may be called “VaijnanikaVyasa”

Rasathanthram comes as third in the series. After mathematics and study on the universe,the study comes to material science. Chemical science in the early period was associated with medicine and metallurgy. There is a famous book “History of Hindu Chemistry” by acharya P C Ray.Mr Nampoothiri's book differ from this and becomes peculiar in the sense it contains the quotes in original which is beneficial for researchers.

In this book the author describes various features such as history and importance,material purification methods,preparative methods,qualitative analysis,metallurgy,alloy manufacturing,making of laboratory vessels and equipments etc. in various chapters. Theoretical chemistry is also dealt with. Atomic theory, divisibility of atom. energy transfer in chemical reactions. completion of chemical reactions etc. are some of them. His style of presentation clearly shows that he is a teacher. He quotes verses in Sanskrit,gives the direct meaning,illustrate ,combine and compare with modern science. In brief ancient science is explained in modern terms. Consider the test for copper sulphate quoted as given in Bhavachinthamani

ahiripugalayogam svajyagodugdthavarnam

ravisadrusamathasyadayase gharshitham yath

sikhirajathakapothajyothirambonimagnam

bhavathiyadapithuthhamzreshtamuktham thadeva:

These lines are also as beautiful as the neck of a peacock. Thutham or copper sulphate has the blue color of peacock neck. On rubbing on an iron surface,copper get separated with the formation of ferrous sulphate. On heating, the blue color is lost and becomes white powder with the color of a dove's neck. The blue color is regained on adding water to the anhydrous amorphous powder. These are the properties of copper sulphate. After the description of properties Sri Nampoothiri gives the relevant chemical equation as a chemistry teacher. Then he says that the regaining of blue color by water can be used as a test for the presence water. Let me remember an incident In a final year undergraduate class I have asked how one can test a colorless liquid ,found in an abandoned bottle in a corner of house,for water. Nobody gave the correct test as given above Later on seeing this in the above book I wondered and wished if the student could read this book .There are so many such examples for his way of presentation. I have quoted one only for showing how the meaning of Sanskrit verses are given and illustrated in modern terms.

The ancient Egyptian chemists,the alchemist tried to convert iron into gold and hadn't succeeded. But the conversion of iron into gold is described in the ancient Indian chemistry. It is quoted not from a Sanskrit book but from a Tamil book called “Peripuranam” by Agasthya Rishi. The transmutation is not by using Particle accelerators but by using magnetic crucibles

Quoting from vagbhata's rasaratnasamuchchayam construction of a chemical laboratory is beautifully explained. Along with the description of yanthras or equipments the qualities of acharya(master) and attenders in the lab are also explained.

As an interdisciplinary work indivisibility of atom is challenged using Bodhayanasuthram(Pythagoras theorem) This book not only introduces the greatness of ancient Indian chemistry but pave different ways for research also.

Originally the author has wrote all the books in the series in his own mother tongue,Malayalam. The translation to English is necessary and important. By this we can show that India was a Wonder in science and technology also. The translation is beautiful and serving the purpose without loosing any idea. The quoted Sanskrit verses are retained in original Devanagari script. The diagrams and equations are also retained as in the original work.

By reading the history of an invention and inventor we can feel the invention. It will be a pleasure and motivation. Shree Nampoothiri has wrote a book in the series to that extent also. The fifth in the series is titled “Arshazasthrajnjanmar”(Rishi Scientists).It is the description of science through history and Life history. For all these works Mr. Nampoothiri is honored with a series of awards also. The recent one is of special mention,the “Vijnjana Peetom”award instituted by Sree Sankara Samskarika Patanakendram for the works on Ancient Indian Knowledge Systems.

With these words I introduce the book on ancient Indian chemistry to the students and researchers of chemical science. Hope that it will motivate and give proper food and foot for thought.

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Perumpavoor

Kalady

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