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## Foreword

History of science is one of the noblest intellectual achievements of man. It is an account of development and promotion of the effort which has led the human beings out of the darkness of the caves and forests and has enabled them to penetrate into the interior world of atoms and to launch vehicles that go far in the cosmos. It took several million years until man used fire, learned how to cultivate and domesticated animals; it took several thousand years until he invented wheels, several thousand years later he developed writing. Each invention and innovation was the result of efforts of several generations, but as man became more experienced and mature, his discoveries and innovation took place quicker, so that now everyday new discoveries or innovations are achieved. History of science is an account of these achievements and victories.

History of science, at the same time, informs us that science is not the result of efforts by a certain race, nation, region or period, but it is the result of collective efforts of mankind in the course of history.

By studying history of science we understand why a certain discovery or innovation (such as vapour power or compass) is neglected for several years; and later, several individuals in different places suddenly rediscover it and it finds common application. We also see how the minor information and findings of scientists and discoverers are gradually accumulated and finally one scientist or discoverer sums them up as an epoch-making discovery or innovation.

History of science is not a means of description of national or racial glory and superiority. But its application and benefit lies in its informing aspect about the factors and means of development of science in a society or the reasons of its decline; it also shows us how science can be taught to masses, how we can attract the society's attention to it, and how science can be propagated and applied.

Since history of science is not recognized appropriately in Iran, it has many claimants and custodians who believe that history of science is just the biography of the scientists. But history of science is an account of the way a scientist or discoverer is led to his achievement, the preceding history of that discovery or innovation, its importance for subsequent works, and its consequences for the development of mankind's knowledge and information. At the same time, history of science is not merely the story of development of engineering sciences or applied techniques, but it is the history of all sciences including humanities.

At present, the major educational institution in the field of history of science in Iran is the Institute for the History of Science, University of Tehran, which receives students for master degrees and has educated a group of young scholars. But its graduates have no opportunity to continue their research, unless as an amateur researcher. On the other hand, an enormous amount of research works in history of science in Iran waits to be done, being almost intact. It seems more appropriate that this institution, instead of receiving new students, organizes a vast research program. Having a few experienced researchers is better than having many graduates who are unemployed or engaged in fields different from their studies.

For investigation in history of science, not only scientific books, but also literary works (verse and prose) including history, story, poetry, orders and financial documents should be surveyed and investigated. It is necessary to carry out precise and documented investigations in the history of different fields of basic and applied sciences connected with irrigation, agriculture, nutrition, architecture, medical sciences, mineralogy, geology, biology, cosmology psychology, linguistics, economy, education and different techniques and industries. Any nation wishing progress should carry out such tasks.

Gholam-Hossein Sadri Afshar

## Abstracts of Persian Articles

### The Production of Olive Oil in Northern Iran: A Brief History

Shamameh Mohammadifar

In the medical texts of the Islamic period, there are several references to the medical applications of olive oil. According to several reports, olive and its oil entered the normal nutrition diet of Iranians in the 17<sup>th</sup> century. Olive and its oil have been produced and used in the two northern provinces of Iran, Gilan and Mazandaran, since that time. In this paper, an account of the botanic characteristics of the olive produced in northern Iran is followed by the reports on production of olive and its oil in the European travel accounts, in their chronological order.

### A Note on the Entrance of Modern Science to Iran

Maryam Zamani

As far as we know, the exact sciences in the Islamic period had no relation with modern science until the 17th century. On one hand, the late Prof. A. Ghorbani (the pioneering historian of mathematics in Iran) believed that the commentary on Muḥammad Bāqīr Yazdī's arithmetic treatise written by his grandson (bearing the same name as his grandfather) in 1695-6 is the earliest evidence of the relation between Islamic science and modern European science, because the author implicitly mentioned the latest pi calculation by F. Viète and L. van Ceulen. Ghorbani regards this date as the end of the so called "Islamic period mathematics". On the other hand, there is another evidence (three similar astrolabes) that their maker has referred to Europeans'

observations on its plate for the constellations. In these astrolabes made by Muḥammad Mahdī Yazdī- one of the Safavid period prominent craftsmen- there are some verses in Persian engraved on the rim of their maters and the last verse provides the construction date which is 1070 AH (1659-70 AD) in the *abjad* alphanumerical system. He has possibly copied the celestial maps from the map made by Melchoir Tavernier dated 1650, and then Muḥammad Mahdī's astrolabe is apparently the oldest document regarding the introduction of modern science in Iran.

### Non-Historical Historiography of Science: A Critical Review of C. K. Raju's Ideas on the Origin of Sciences

Amir-Mohammad Gamini

*Is Science Western in Origin?* is one of the many books written by Dr. C. K. Raju to reverse all of the academic historiography of Islamic and Classical sciences. He attributes the origin of Ptolemy's *Almagest* and Euclid's *Elements* to the Eastern and non-Greek sources, believing that Ptolemy and Euclid are names of Iranian or Egyptian people. The *Almagest*, he believes, is written or improved in the Islamic period due to the star catalogues it includes. He expresses that the Hellenization of sciences is a construction of the Crusaders in 13<sup>th</sup> century. Unfortunately Raju forgets the wide and straight references of Islamic scholars to the Greek origin of *Almagest* and many other mathematical sources, unless they were the first people holding the Greek origin of sciences, inspired by the future generations of the Christian Crusaders! Raju's evidences from the star catalogues and historical sources are vague and evasive.

### A List of Sundials in Iran (first appendix)

Mohammad Bagheri

In the previous issue of *Miras-e Elmi* a list of 160 sundials, noon markers and natural chronometrical devices in Iran was provided. This short appendix introduces 11 newly made or newly discovered sundials in Iran. A sort of sundial which was made and used in Aftar (a village near Semnan, Iran) is also introduced which resembled old Egyptian sundials with a horizontal gnomon in

north-south direction above a graduated wooden rod in the east west direction. The unit of time for this popular sundial of Aftar was 1/32 of 24 hours (equal to 40 minutes).

### **Zij Yamīnī: A Persian Treatise Written in 511 AH**

Ali Safari Agh Ghaleh

*Zij Yamīnī* is one of the oldest *zījes* in Persian, composed by Muḥammad ibn ‘Alī ibn Mālīk ibn Abū Naṣr al-Ḥaqāyiqī. It was dedicated to Bahrām Shāh ibn Mas‘ūd Ghaznavī (gov. 511-552 AH) in his first year of rulership. The author had a lot of works at his disposal such as Ptolemy’s *Almagest* and al-Bīrūnī’s *Masudic Canon*. But this *zīj* is considerably based on Muḥammad ibn Sinān ibn Jābir Battānī Ḥarrānī’s *Zij Raṣadī Raqqī*. The author summarized its central topics and then converted certain astronomical parameters from the longitude of Raqqa to that of Ghazna, taking advantage of the former observations. Therefore the *zīj* should not be regarded as an original work. However it deserves to be studied literarily as well as chronologically. For instance, there is a table in the section four of the fifth chapter of the first book, which provides the exact dates of historical events of the Ghaznavid dynasty. This aspect of the *zīj* is unique. As far as we know, the only extant manuscript of the *zīj* is preserved in the National Library of Bulgaria as Or. 1750.