

Abstracts of Persian Articles

A History of the Cultivation of *Rubia tinctorum* and its Application in Dyeing in Iran

Shamameh Mohammadifar

Rubia tinctorum, the common madder or dyer's madder, is a plant species in the family Rubiaceae been used since ancient times as a vegetable red dye. Its roots and rhizomes contain several polyphenolic compounds such as ruberythric acid, alizarin, purpurin and rubiadin that give its red color. Early evidence of dyeing with madder in Persia is in *Bundahishn* (traditional name of a major Pahlavi work of compilation based on the Zoroastrian scriptures). Iranian scholars in the Islamic period such as Abū Ḥanīfa Dīnawarī, Abū Rayḥān Bīrūnī, Ḥamd-Allāh Mustaufī, Rashīd al-Dīn Faḡl-Allāh and Abū Naṣrī Herawī mentioned its botanical characters, varieties, distribution, and horticultural conditions in Persia. It was also noticed by European merchants, travelers and explorers such as Jean-Baptiste Tavernier, Jean Chardin, Sir John Macdonald Kinneir, especially as an abundant dyeing matter cultured in Persia exported to other countries such as India. Nowadays, because of the imports a lot of synthetic alizarin, the number of workplaces related to preparation red madder in Iran is decreasing.

Mathematical Problems on Chessboard from Iran around One Thousand Years ago and Their Relation with Magic Squares and Graph Theory

Mohammad Bagheri

In an Arabic manuscript on chess playing and chess enigmas kept in Istanbul, general cases of the famous Euler problem is mentioned. In one case, we want

to start from the corner, make alternately horse moves (L-shaped as today) and elephant move (two slant steps, not as many steps in modern rule), so that all the 64 squares are swept without repetition. In the manuscript, the numbers are shown in alphanumeric *Abjad* system in which the Arabic letters are used to denote numbers. Then the solution is also given in an Arabic poem of 32 couplets (64 lines). Each line starts with two letters that provide the coordinates of the squares in the required order. The poem is from a certain 'Alī b. 'Abd-Allāh Shīrāzī. Leonhard Euler later studied this mathematical enigma for horse moves only, which bears his name. The manuscript is copied in the 12th century and contains materials from a chess expert named Sauī (d. mid-10th century), a famous Arab scholar whose ancestors were Turks coming from the south-eastern coast of the Caspian Sea. A facsimile of the manuscript has been published in Frankfurt (1986) and contains several chess enigmas which now belong to combinatorial mathematics (combinatorics).

The Enameled Qibla-finder Bowl from Damascus

Maryam Zamani

An enameled ceramic qibla-finder bowl exists in Damascus museum (cover page of this issue of *Miras-e Elmi*). Magnetic needle could float on the water in the bowl and establish cardinal directions. The circular table drawn in the bowl gives the deviation of the direction of qibla in 40 localities. The localities are in the eastern part of the Muslim world, from Syria to India including some holy places specifically for Shiites. The information is provided by *Abjad* letters and there is some confusion in the information given in the list. For example, the qibla deviation of Mashhad is written 45° E, while its true value is 54° W. According to the inscription on its center, it was made in Damascus by a certain Seyed Thābit. On the outer edge, inscription indicates: “made for the king, the winner, the victorious, the just, Khāqān, son of Khāqān, king of the two lands and two seas and servant of the two noble sanctuaries, Sultan Selim, may God perpetuate his reign; amen!”. This refers to the Ottoman Sultan Selim who reigned in Syria from 1516 to 1520 AD.

Question & Answer, a Writing Style from the Qajar Period

Maryam Saghafi

In the translation movement of the Qajar period, many books were translated from European languages into Farsi. These books contain several fields such as literature, history, geography, novels, industry books, military science and chemistry. European scientific writing style was transferred to Iran through the translation of these texts. Questions and answers or multiplayer conversations were among European writing styles that was transferred and improved in Iran. Many books, in various fields of politics and education, were translated and were written under this style. In this paper, we survey few samples of educational texts composed in questions and answers style. The main question of this research is whether this style of writing was used in the classical literature of Iran or not?

Zarudny, a Zoologist Influential on Ornithology of Iran

Shamameh Mohammadifar

Nikolai Alekseyvich Zarudny (b. Ukraine, 13 September 1859; d. Tashkent, 17 March 1919), conducted five long field trips in the Caspian region, northern Iran, the plains of Bukhara, as well as the Khiva oasis, between 1884 and 1892. He published his book, *Ornithological fauna of the Caspian Region* in 1896, covering the results of the five expeditions. He was the first zoologist researcher of western Central Asia, an area not visited by any zoologist before him. Zarudny conducted four more expeditions to Iran (1896, 1898, 1900-01, 1903-04), with the support of the Russian Academy of Sciences, the Russian Geographic Society, and the St. Petersburg Zoological Institute. During these trips, he wrote reports related to the fauna and some social conditions of the visited places in Iran. His team collected 3,140 specimens of birds, and about 50,000 specimens of insects of Iran. For his study of the Persian fauna, the Russian Geographical Society twice awarded him the prestigious Przhevalsky Prize and the small gold medal. During the last years of his life, Zarudny worked on a long-term project, which he intended to publish under the title

of “Ornithological Fauna of the Turkestan Region,” but his death prevented its completion. He died from accidental poisoning in Tashkent at the age of sixty. Zarudny’s collections enrich the museums of Russia and some foreign institutions. At present, the main part of his collection is kept in the Zoological Institute of the Russian Academy of Sciences. Some specimens are stored in Tashkent University. His publications, including monographs, are totally 218 titles. More than 130 species of mammals, birds, reptiles, fish, arthropods, and mollusks were named after him.

