From: Thomas Hockey et al. (eds.). *The Biographical Encyclopedia of Astronomers*, *Springer Reference*. New York: Springer, 2007, pp. 177-179

http://dx.doi.org/10.1007/978-0-387-30400-7_333

Dārandawī: Muḥammad ibn ʿUmar ibn ʿUthmān al-Dārandawī al-Ḥanafī

İhsan Fazlıoğlu

Born **Dārende near Malatya, (Turkey), 1739**

Died **Istanbul, (Turkey)**

Dārandawī, philosopher, logician, *mufassir* (scholar of Qurʾānic exegesis), and astronomer, became known for preparing a perpetual calendar as well as for his studies on the relation between astronomy and religion. After receiving his elementary education in his home region, he took courses in the town of Marʿash from Sāchaqlı-zāde Muḥammad al-Marʿashī (died: 1733), one of the most important Ottoman teachers (*mudarris*) of the time. Dārandawī came to Istanbul during Sultan Aḥmad III's reign and worked as *mudarris* in various schools (*madrasa*). Furthermore, he administered Aḥmad III's private treasury. Dārandawī died during the reign of Maḥmud I.

Dārandawī, as a versatile Ottoman *mudarris* who lived during the Tulip Period (1718–1739), participated in various scientific and cultural activities. Out of the committees founded by the Grand Vizier Newshehirli Dāmād Ibrāhīm Pasha for the translation of scientific and literature books into Turkish, he worked in the one responsible for the translation of Badr al-Dīn al-ʿAynī's (died: 1451) *ʿIqd al-jumān fī tarīkh ahl al-zamān*, an encyclopedia dealing with a number of sciences such as cosmology, astronomy, geography, zoology, and history. It consisted of 24 volumes, each volume being approximately 200 pages. Furthermore, in the *madrasa*s where Dārandawī worked, he trained many important students of the future such as Ālashahīrlī ʿUthmān ibn Ḥusayn. Dārandawī was a preeminent scholar in the cultural circles of the time, especially in fields such as Qurʾānic exegesis (*tafsīr*), the science of disputation (*ʿilm al-munāẓara*), the philosophy of logic and language, astronomical instruments, the knowledge of timekeeping (*ʿilm al-mīqāt*), and religious astronomy. His works of logic included *al-Tafriqa bayn madhhab al-mutaʾakhkhirīn wa-bayn al-qudamāʾ (al-mutaqaddimīn) fī al-qaḍiyya waʾl-taṣdīq* (Süleymaniye Library, Yazma Bağışlar MS 60), *Risāla fī Ḥall mushkilāt mabāḥith al-taʿrīf* (Süleymaniye Library, Hafid Efendi MS 160), *Risāla fī ajzāʾ al-qaḍiyya* (Süleymaniye Library, Bağdadlı Vehbi MS 895), *Risāla fī imkān al-ʿāmm* (Süleymaniye Library MS 449), *Risāla fī Mabāḥith al-wasīṭa* (Ali Emiri, Arabi MS 352), and *Risāla fī Ashkāl arbaʿ fī al-manṭiq* (Köprülü Library, Ahmet Pasha MS 352). In them, he focused on definition, proposition, judgment, and the relation between propositional possibility (*imkān*) and the physical world. Dārandawī criticized the opinions of the theologians (*mutakallim*s), tending more toward **Ibn Sīnā**'s methods in these subjects.

Dārandawī was interested in the relation of religion and science and put a special emphasis on the relation between religion and astronomy. Working within the paradigm of his time and with a

consideration of the religious dimensions, he wrote a book, at the request of his students, entitled *Risāla fī Ḥall mushkilāt masā'il thalāth* (in Arabic) (Kandilli Observatory MS 107), in which he attempted to answer three astronomical questions that Kātib Čelebī (died: 1657) had previously asked Shaykh al-Islām Bahā'ī Efendi al-**ʿĀmilī**, who had tried to answer them at the beginning of the 17th century in his work entitled *al-Ilhām al-muqaddas min al-fayḍ al-aqdas* (in Turkish) (Süleymaniye Library, Reisülküttab MS 1182/4). The first question is related to the length of daylight and night at the North Pole; the second concerns the possibility of sunrise in the west, and whether it can be explained through astronomy or not; and the third one is about the sacred direction to Mecca (*qibla*). This book's importance lies in the way it deals with science and religion and its use of Western European ideas. This book of Dārandawī exerted a considerable influence in Ottoman scientific circles. Following him, ʿAbd al-ʿAzīz al-Raḥbī (died: after 1770) examined the second question in detail in his book entitled *Kashf al-ʿayn ʿan intibāq al-mintaqatayn* (in Arabic) (Iraq Museum MS 12648). Aḥmad ibn Ḥusayn ibn Aḥmad al-Gīridī (alive: 1768), translated Dārandawī's book into Turkish under the name *Ḥall-i mushkilāt-i arbaʿa*, with revisions and some additions, and presented it to Sultan Muṣṭafa III. Gīridī criticized the noted astronomer **Taqī al-Dīn** with respect to the second question (Süleymaniye Library, Aṣr Efendi MS 418/4).

In another work on timekeeping entitled *Risāla fī al-Rubʿ al-mashhūr bi-'l-muqanṭarāt* (in Arabic), Dārandawī examined an astronomical instrument called *al-rubʿ al-muqanṭarāt* (Yusuf Ağa MS 7225/14). The book, prepared for practical use, explains how to use the instrument: to calculate prayer times, the adjustment of which was considered necessary in Islamic civilization to attain perfection in religious, administrative, and social life; to determine the geometrical–trigonometric aspects of the Kaaba in Mecca; and to find the beginnings and ends of days and months, especially the holy month of Ramadan, which has particular importance for religious practices. There are about 30 extant copies, and their distribution indicates that it was widely used in two important Ottoman cities, Istanbul and Cairo.

Dārandawī's most important astronomical work, for both Ottoman–Islamic and Western astronomical history, is his *Taqwīm-i dā'imī* (in Turkish), known also as *Rūznāme* (Kandilli Observatory MS 440). This calendar, designed for perpetual use, was prepared for Istanbul, the capital city of the Ottoman State. The work can be regarded as the continuation of a tradition of such *Rūznāme*s (calendars) first prepared by Muṣliḥ al-Din Muṣṭafa ibn Aḥmad al-Ṣadrī al-Qunawī (died: 1491), known as Shaykh Wafā', who lived during the reigns of Sultan Muḥammad II, the Conqueror, and Sultan Bāyazīd II. Dārandawī's tables were arranged for each degree of the solar longitude. In the book, all the time periods of a day, such as dawn, sunrise, morning, *kuṣluk* (time between morning and noon), noon, first and second afternoon, evening, and night, as well as the time that the Sun is on the azimuth of Mecca, are stated in units of hour and minute for longitude 41°. On the other hand, the parameters used to determine dusk are based on the works of the two important figures of the Islamic tradition of timekeeping: **Khalīlī** and **Ibn al-Shāṭir**.

Albert Toderini, who visited Istanbul in 1781–1782, states that the *Taqwīm* was also known in Western Europe. Toderini, noting that the *Taqwīm* was translated by a Russian and sent to Saint Petersburg, says that he read that copy. According to him, the precision of the work extended its usefulness and surpassed previous books written on the same subject. David King notes that most extant copies of Shaykh Wafā's *Rūznāme* do not contain prayer tables; King, for example, says that G. H. Velschii's book on Turkish and Persian almanacs, published in Latin in 1676, similarly left out these prayer tables in the final part of the book where he presented Shaykh Wafā's *Rūznāme*. According to King, the reason for this is that Dārandawī's *Taqwīm* was more meticulous and precise. Thanks to its reputation, the *Taqwīm* was republished in 1787 by M. D'Ohsson in his *Tableau Général de l'Empire Ottoman*.

Dārandawī has another astronomical book entitled *Sharḥ-i Rūznāme* (in Turkish), which awaits

study. This is most probably the commentary of the *Taqwīm* (Atatürk University, SÖ, MS 18824).

Selected References

Aydüz, Salim (1997/1). "Lāle Devri'nde yapılan ilmî faaliyetler." *Dīvān İlmî Araştırmalar*. 3: 143–170.

Bağdadlı, İsmail PaŞa (1955). *Hadiyyat al-ʿārifīn*. Vol. 2, p. 324. Istanbul: Milli Eg-itim Bakanlig-i Yayinlare.

——— (1945–1947). *Īḍāḥ al-maknūn*. Vol. 1, p. 406. Istanbul: Milli Eg-itim Bakanlig-i Yayinlare.

Brockelmann, Carl (1938). *Geschichte der arabischen Litteratur*. 2nd ed., suppl. 2, p. 482. Leiden: Matabaa-i Amire, E. J. Brill

Bursalı, Mehmed Tahir (1914–1923). *Osmanlı Müellifleri*. Vol. 2, p. 28. Istanbul, 1333–1342 H.

D'Ohsson, M. (1787) *Tableau général de l'empire othoman*. Vol. 1, p. 192. Paris.

İhsanoğlu, Ekmeleddin *et al*. (1997). *Osmanlı Astronomi Literatürü Tarihi (OALT)*. (History of astronomy literature during the Ottoman period). Vol. 1, pp. 295–296, 406–410; Vol. 2, pp. 463–465. Istanbul: IRCICA.

King, David A. (1986). "Astronomical Timekeeping in Ottoman Turkey." In *Islamic Mathematical Astronomy*, XII. London: Variorum Reprints, pp. 247, 249–250.

Toderini, Giambatista (1789). *De la littérature des Turcs*, translated into French from the Italian by l'abbé de Cournand. 3 Vols., Vol. 1, p. 406. Paris. (Originally published as *Letteratura turchesca*. Venice, 1787.)

Velschii, Georgii Hieronymi (1676). *Commentarius in Ruzname Naurus sive Tabulae aequinoctiales novi Persarum & Turcarum anni*. Augustae Vindelicorum.