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Khalīfazāde Ismā‘īl: Khalīfazāde Çınarī Ismā‘īl Efendi ibn Muşţafā

Meltem Akbas

Died (Turkey), probably 1790

Khalīfazāde Ismā‘īl was an Ottoman astronomer, astrologer, timekeeper (*muwaqqit*), and astronomical instrument maker. He lived and worked in Istanbul, but we have no information about the date and place of his birth. The title *Çınarī* in some of his manuscripts implies that he lived in the Çınar district, also known as Sancaktar Hayrettin. The name Khalīfazāde derived from the profession of his father Muşţafā Efendi, who was a *khalīfa* (experienced apprentice) of *mukābele-i piyāde* and worked in the barracks at Sumnu (in Bulgaria). *Mukābele-i piyāde* was an office under the Treasury that enlisted infantry and handled the paper work for their salaries. This was also Khalīfazāde Ismā‘īl's first position, and it required mathematical skills; he worked in the same office as a *şākird* (apprentice) in 1755, and then was promoted *başhalife*.

Probably the earliest work of Khalīfazāde is a sundial that he most likely completed as an apprentice. This vertical sundial still exists and is located at the southwest wall of the Hekimoğlu Ali Pasha Mosque in the neighborhood of Çınar where Khalīfazāde lived. The inscription on the sundial notes that it was engraved in 1761 by Khalīfazāde Ismā‘īl.

In 1767, Khalīfazāde was appointed as *muwaqqit* to the Laleli Mosque (also called the Sultan Muşţafa III Mosque) and remained there until 1789. During this period he compiled or translated a number of works on astronomy, astrology, and mathematics. In 1767, Khalīfazāde constructed a horizontal sundial engraved on marble that is no longer extant, but which partially existed until the end of the 19th century. However, located at the base of the west minaret of the Laleli Mosque are two other vertical sundials made by him. The larger of the two was completed in 1779. Although the lines of the sundials are not sharp, the inscription is still legible and states that it was "engraved by muwaqqit Ismā‘īl."

The Ottoman Sultan Muşţafā III (reigned: 1757–1774), who was particularly fond of astrology, asked Khalīfazāde to translate two studies on astronomy from French to Turkish; this indicates that he had some knowledge of French, but we have no information on how he acquired this knowledge. The first translation, *Rasad-i qamar* or *Terceme-i Zic-i Clairaut*, was related to the movements of the Moon and was probably based on **Alexis Clairaut**'s (1713–1765) astronomical work entitled *Théorie de la lune*. Two copies exist: The first is Istanbul, Kandilli Observatory Library MS 244 (which is the author's copy), completed in 1767 and dedicated to Muşţafā III; a second copy is Kandilli Observatory Library MS 190, completed in 1767.

Khalifazāde's second translation, also at the request of Muṣṭafā III, was of **Jacques Cassini's** (1677-1756) *Tables astronomiques du soleil, de la lune, des planètes, des étoiles fixes et des satellites de Jupiter et de Saturne* (Paris, 1740). Completed in 1772, it was named *Tuhfe-i Behic-i Rasini Terceme-i Zic-i Cassini*. (Copies include Istanbul, Topkapı Palace Museum Library, Hazine MS 451, copied by F. Karatay in 1772 and dedicated to Muṣṭafā III; and Kandilli Observatory Library MS 228.) This work, known as Cassini's *Zij*, was significant for two main reasons. First, it introduced logarithms to the Ottomans; furthermore, Khalifazāde added tables to the translation giving the logarithms for sines and tangents of arcs from 0° to 45° to the level of minutes, and he also provided logarithmic tables for integers from 1 to 10,000. Second, this *zīj* influenced Ottoman timekeeping. **Ulugh Beg's** *zīj* was abandoned during Sultan Selim III's reign (1789-1807) due to its errors (as much as 1 hour) and replaced with calendars and astronomical calculations based on Cassini's *zīj* beginning in 1800. This *zīj* was then used for almost 30 years.

Khalifazāde Ismā'il Efendi wrote other works in the fields of astronomy, astrology, and mathematics that can be found listed in *Osmanli Astronomi Literatürü Tarihi* and *Osmanli Matematik Literatürü Tarihi*.

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