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## Abū al-‘Uqūl: Abū al-‘Uqūl Muḥammad ibn Aḥmad al-Ṭabarī

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*Flourished* **Yemen**, circa 1300

Abū al-‘Uqūl was the leading astronomer in Taiz, Yemen, circa 1300. His epithet al-Ṭabarī indicates that he or his family came originally from northern Iran. He was a contemporary of the ruler **Ashraf** and **Muhammad ibn Abī Bakr al-Fārisī**, the latter also of Iranian stock. No details of Abū al-‘Uqūl's life are known to us beyond the fact that he was the first teacher of astronomy appointed at the Mu‘ayyadiyya Madrasa in Taiz by the Sultan al-Mu‘ayyad, brother and successor of al-Ashraf.

Abū al-‘Uqūl compiled an astronomical handbook (Arabic: *zīj*) for the Yemen and was not shy about admitting to having taken most of it from other sources; indeed, he called his work *al-Zīj al-mukhtār min al-azyāj* (The *Zīj* culled from other *Zījes*). In fact, the work is based heavily on the *Hākīmī Zīj* of the 10th-century Egyptian scholar **Ibn Yūnus**. What is original are the various tables of spherical astronomical functions for latitudes in the Yemen, and it is clear that spherical astronomy was the author's forte.

Abū al-‘Uqūl compiled the largest single medieval corpus of tables for astronomical timekeeping for a specific latitude, with over 100,000 entries. This corpus, entitled *Mir‘āt al-zamān* (Mirror of Time), is computed for latitude 13° 37', an excellent value for Taiz (accurately 13° 35'!) derived by either Abū al-‘Uqūl or al-Fārisī, and obliquity 23° 35'. In addition to tables of the hour angle and the time since sunrise for each degree of solar altitude and solar longitude, such as are found in the Cairo corpus associated with Ibn Yūnus, there are tables displaying the longitude of the ascendant or horoscopus as a function of solar altitude and longitude, and others displaying the altitude of various fixed stars at daybreak as a function of the ascendant. The inspiration for the tables associated with the ascendant seems to come from Iraq or Iran, where such tables are attested, rather than from Egypt. Abū al-‘Uqūl's extensive tables are known from a unique manuscript copied in Mocca on the Red Sea coast of Yemen in 1795. To what extent they were used over the centuries is unclear.

Abū al-‘Uqūl also prepared an almanac in which astronomical phenomena were associated with aspects of agricultural practice.

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