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Yaḥyā ibn Abī Manṣūr: Abū ‘Alī Yaḥyā ibn Abī Manṣūr al-Munajjim

Benno van Dalen

Flourished **Baghdad, (Iraq), circa 820**

Died **near Aleppo, (Syria), 830**

Yaḥyā ibn Abī Manṣūr was the senior astronomer/astrologer at the court of the ‘Abbāsid caliph **Ma’ mūn**. He is well-known for his leading role in the earliest systematic astronomical observations in the Islamic world, which were carried out in Baghdad in 828-829, and for the astronomical handbook, *al-Zīj al-mumtaḥan*, that was written on the basis of these observations.

Yaḥyā was of Persian descent and originally named Bizīst, son of Fīrūzān. Since his father, Abū Manṣūr Abān, was an astrologer in the service of the second ‘Abbāsid caliph al-Manṣūr (754-775), we may assume that Yaḥyā spent his youth in Baghdad. His first known position was as an astrologer for al-Faḍl ibn Sahl, vizier of the Caliph Ma’ mūn. After al-Faḍl was assassinated in February 818, Yaḥyā converted to Islam and adopted his Arabic name. He became a boon companion (Arabic: *nadīm*) of Ma’ mūn, and is known to have made astrological predictions for the caliph on various occasions. He was also associated with the House of Wisdom and is mentioned as a teacher of the **Banū Mūsā**.

Ma’ mūn strongly supported scientific activities, including the translation of Greek and Syriac scientific works into Arabic. In 828 and 829, he ordered astronomical observations to be carried out in the Shammāsiyya quarter of Baghdad with the purpose of verifying the parameters of the astronomical models of **Ptolemy** as found in his *Almagest* and *Handy Tables*. Yaḥyā became one of the most important persons involved in these observations together with **Jawharī**, **Sanad ibn ‘Alī**, and **Marwarrūdhī**.

The observational activities at Baghdad did not last for more than one and a half years. In that period basic observations of the Sun and the Moon were made, but a determination of all planetary parameters was not possible. Some specific values that were found are: 23° 33' for the obliquity of the ecliptic (encountered only in the works of Yaḥyā and incidentally in those of his later contemporary **Habash al-Hāsib**); a precession of the equinoxes of 1° in 66 Persian years (which may, however, have been influenced by Sasanian-Iranian measurements); a maximum solar equation of 1° 59'; and a maximum equation of center for Venus of 1° 59'. All four results constituted major improvements upon Ptolemy's outdated or incorrect values.

Yaḥya's name is associated with an astronomical handbook with tables dedicated to Ma’ mūn. This

work is known as *al-Zīj al-Ma'mūnī* or, more commonly, *al-Zīj al-mumtaḥan*, that is the *Verified Zīj* (Latin *Tabulae probatae*). A late recension of the *Zīj* is extant in the manuscript Escorial árabe 927, which contains, besides original material from Yaḥyā, numerous chapters, treatises, and tables of later date. In particular, we find material from the important 10th-century astronomers **Ibn al-A'lam**, **Būzjānī**, and **Kūshyār ibn Labbān**. Furthermore, there are various tables specifically intended for a geographical latitude of 36°, which corresponds to Mosul rather than to Baghdad. In 2004 the manuscript Leipzig Vollers 821 was recognized to be a recension of the *Mumtaḥan Zīj*. In some respects it is similar to the one in the Escorial library, but with fewer later additions. This copy has various insertions originating from **Battānī** and was apparently used in present-day southeastern Turkey.

Among the materials in the Escorial manuscript explicitly attributed to Yaḥyā are the tables for the lunar equation and the theory of solar eclipses. The latter is a typical mixture of Indian, Sasanian, and Hellenistic influences. The Ptolemaic table for the solar equation, which is also found in Ḥabash's *zīj*, may not be original, since a table of a more primitive nature is attributed to Yaḥyā in the 14th-century *Ashrafī Zīj*. Whereas the planetary equations were directly copied from the *Handy Tables*, the tables for the latitudes of the Moon and the planets are of a simple sinusoidal type and based on otherwise unknown parameters. A table with longitudes and latitudes of 24 fixed stars is indicated to be for the year 829 and derived from the observations made at Shammāsiyya.

It is not known with certainty whether the original *Mumtaḥan Zīj* was a work by Yaḥyā alone or a coproduction of the group of astronomers who were involved in the observations carried out on the order of Ma'mūn and who were referred to as *aṣḥāb al-mumtaḥan*, "authors of the verified (tables)." It is also possible that various of these astronomers wrote their own works with the title *Mumtaḥan Zīj*. Similarly, it is unclear what Ibn al-Nadīm (10th century), the earliest important biographer of Muslim scholars, meant by a "first" and "second" "copy" (Arabic: *nuskha*) of the work. In any case, the *Mumtaḥan Zīj* was very well-known and frequently quoted. **Thābit ibn Qurra** (second half of the 9th century) wrote a treatise on the differences between the *Mumtaḥan Zīj* and Ptolemy's astronomical tables, which is unfortunately lost.

Very little is known about other works by Yaḥyā. Ibn al-Nadīm mentions a *Maqāla fī 'amal irtifā' suds sā'a li-'arḍ Madīnat al-Salām* (Treatise on the determination of the altitude of [each] sixth of an hour for the latitude of Baghdad), as well as a *Kitābun yaḥṭawī 'alā arṣād lahu* (Book containing his observations) and *Rasā'il ilā jamā'a fī al-arṣād* (Letters to colleagues concerning observations). A small astrological work by Yaḥyā entitled *Kitāb al-rujū' wa-'l-hubūṭ* (Book on retrogradation and descent) is extant in the very late manuscript 173 of Kandilli Observatory in Istanbul. It appears that Yaḥyā was also involved in the measurement of 1° on the meridian that was carried out on the order of Ma'mūn in the Sinjār plain (in northern Iraq). On the other hand, both the book *Fī al-ibāna 'an al-falak* and a set of measurements of the obliquity made at Marv (mentioned by **Bīrūnī** in his geographical masterwork *Taḥdīd*) have been incorrectly attributed to Yaḥyā by modern authors; in fact, they are associated with the Tahirid Governor of Khurāsān, Manṣūr ibn Ṭalḥa (circa 870).

Yaḥyā died in the early summer of 830 during the first of Ma'mūn's expeditions against Tarsus in Asia Minor. He was buried in Aleppo, where his tomb could still be seen in the 13th century. Thus the astronomical observations carried out during the years 831 and 832 at the monastery of Dayr Murrān on Mount Qāsiyūn near Damascus and headed by Marwarrūdhī took place after Yaḥyā's death. A number of Yaḥyā's descendants were also boon companions of the 'Abbāsīd caliphs and well-known scholars. One of his four sons, Abū al-Ḥasan 'Alī (died: 888), collected a huge library for al-Faṭḥ ibn Khāqān, secretary of caliph al-Mutawakkil (847-861), where, among others, the famous astrologer **Abū Ma'shar** is known to have studied. Yaḥyā's grandson Yaḥyā ibn 'Alī was a famous theorist of music. His great-great-grandson Hārūn ibn 'Alī (died: 987) was an able astronomer and likewise author of a *zīj*.

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