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Ibn al-Ṣaffār: Abū al-Qāsim Aḥmad ibn ʿAbd Allāh ibn ʿUmar al-Ghāfiqī ibn al-Ṣaffār al-Andalusī

Mònica Rius

Born **Cordova, al-Andalus (Spain)**

Died **Denia, al-Andalus (Spain), 1035**

Ibn al-Ṣaffār (literally: son of a coppersmith) was a prominent astronomer at the school of **Maslama al-Majrīṭī**. Located in Cordova, this was one of the most important centers for the study of the exact sciences in Andalusia. In Cordova, Ibn al-Ṣaffār taught arithmetic, geometry, and astronomy. Among his disciples in Cordova were Ibn Bargūth, al-Wāsiṭī, Ibn Shahr, al-Qurashī, and Ibn al-ʿAṭṭār. Because of civil war, he moved to Denia, on the Eastern coastline of the Iberian Peninsula where he lived until his death. His brother, Muḥammad, who also retired in Denia, was a celebrated astronomical instrument-maker; two of his astrolabes and a plate are preserved today in the Royal Scottish Museum in Edinburgh, the Westdeutsche Bibliothek in Marburg, and the Museo Nazionale in Palermo.

Ibn al-Ṣaffār, along with his teacher Maslama al-Majrīṭī, composed works in the tradition of **Khwārizmī**'s *Sindhind*; this is especially significant since Khwārizmī's original text was lost. **Ibn al-Samḥ** and Ibn al-Ṣaffār also made two recensions. The Arabic text of the version of Maslama and Ibn al-Ṣaffār is lost, but there exist several Latin translations of it: one by **Adelard of Bath**; a revision due to Robert of Chester; and another translation attributed to the Spanish Jew, Petrus Alfonsi (flourished: late 11th/early 12th century). Ibn al-Samḥ's version has not survived either; only seven chapters from Ibn al-Ṣaffār's canons are still extant. It is difficult to establish which data were taken from Khwārizmī and which were provided by the Andalusian astronomers, in as much as materials from the Indo–Iranian, the Greco–Arabic, and the Hispanic traditions are found. Nevertheless, it seems clear that certain tables that use the meridian of Cordova or that refer to the Hispanic era are due to Maslama and his disciples.

Ibn al-Ṣaffār's most popular work was a treatise on the uses of the astrolabe, a book that was still being used in Europe during the 15th century. According to **Ṣāʿid al-Andalusī**, the treatise was written in a clear, simple, and comprehensible style. King **Alfonso X**'s astronomers often used the work. Johannes Hispalensis and Plato of Tivoli (flourished: 1134–1145) translated it into Latin. Johannes Hispalensis' translation (edited by Millás in 1955) misattributed the translation of Ibn al-Ṣaffār's treatise on the astrolabe to Maslama. This may be explained since the last chapter in the treatise is probably a fragment taken from Maslama's *zīj*, which led later scholars to attribute the entire work to the teacher Maslama rather than to the student Ibn al-Ṣaffār. The translation by Plato of Tivoli (edited by Lorch *et al.*, *1994*) contains an introduction in which Plato dedicates his

work to a certain Johannes David and states that this is the best Arabic treatise that he has ever read. There also exists a Hebrew version by Profeit Tibbon (**Jacob ben Makhir**) as well as one in Old Spanish and Spanish with Hebrew characters. The Arabic text was edited by J. Millás Vallicrosa (who also translated it into Catalan) in 1955.

One of the topics Ibn al-Ṣaffār analyzed was the determination of the *qibla* (direction toward Mecca); the text gives a value of 30° south of east for the *samt* of the *qibla* at Cordova, which corresponds to the azimuth of the rising Sun at the winter solstice. Ibn al-Ṣaffār also refers to **Ptolemy**'s *Geography*, which indicates that Andalusian astronomers were interested in other works apart from the *Sindhind*.

Ibn al-Ṣaffār is credited with being the author of the inscriptions on the oldest surviving Islamic sundial, made *circa* 1000, in Cordova (and preserved in the Museo Arqueológico Provincial of Cordova, Spain). On a fragment of the sundial it is possible to observe the curve for the midday (*ẓuhr*) prayer; presumably the original instrument had that of the afternoon (*ʿaṣr*) prayer. Errors on the sundial, however, could not have been made by a careful astronomer, so the instrument may not have been constructed by Ibn al-Ṣaffār himself, but perhaps was "in the manner of" Ibn al-Ṣaffār.

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