Ibn Tibbon, Jacob Ben Machir | Encyclopedia.com

(*b*. Marseilles, France [?], *ca*. 1236; *d*. Montpellier, 1305)

astronomy, science translation.

In Romance languages Ibn Tibbon is known as Don Profiat or Profeit, and in Latin as Prophatius Judaeus. These names come from translation of the Hebrew *mehir* into the languages of southern France.

His family, commonly designated by the patronymic Ibn Tibbon, came from Granada. His great-grandfather, Judah ben Saul ibn Tibbon (1120 – *ca*. 1190), moved in 1150 to the south of France because of the unrest in Granada. He established himself at Lunel, where in 1160 Benjamin of Tudela found him practicing medicine. Having grown up in an Islamic country, Judah ben Saul spoke Arabic and was thus able to translate into Hebrew, for the benefit of his coreligionists, religious and philosophical works written in Arabic by Bahya ibn Paquda, Solomon ibn Gabirol, Judah ha-Levi, Ibn Janah, and Saadia. His son, Samuel ben Judah (1150–1232), continued this work of translation; but it was his grandson, Moses ben Samuel (*fl*. 1240–1283), and his great-grandson, Jacob ben Machir, who brought the family greatest glory. The translations made by the family were among the most important cultural works of the time, at least from a historical point of view, since they were part of a process by which Arabic learning and, through that, Greek scientific traditions were made available to the scholars of medieval Europe.

Jacob studied medicine at Montpellier, and it appears that from 1266 to 1267 he lived in Gerona, Spain, where he was a follower of Moses ben Nahman. Ideologically he adhered to the Maimonidean philosophy and spent most of his life in Lunel and Montpellier.

Working from texts in Arabic, Ibn Tibbon rendered into Hebrew works by Autolycus of Pitane (*On the Moving Sphere*), Euclid (*Elements, Data*), Menelaus of Alexandria (*Spherics*), Quṣā ibn Lūqā (*Use of the Celestial Globe*), Ibn al-Haytham (*On the Configuration of the World*), Ibn aḷ-affār (*On the Use of the Astrolabe*), al-Zarqālī (*Use of the̦ afī̦a*), al-Ghazālī (*Balance of Knowledge*), Jābir ibn Afla̦ (*Correction [i̦lā̦] of the Almagest*), and Ibn Rushd (compendium of the Organon, commentary on Aristotelian zoology).

His own works, which deal with astronomy, are Prologue to Abraham bar̦ iyya's *Calculation of the Courses of the Stars*, extracts from the *Almagest, Roba' Yisrael*, and *Almanac*.

The *Roba' Yisrael* ("Quadrant of Israel") was written between 1288 and 1293 in Hebrew, and was translated into Latin in 1299 by Armengaud, son of Blaise (*d*. 1314). In 1301 an expansion of this work appeared; the text has been lost but is preserved in the Latin translation (*ca*. 1309) by Peter of St.-Olmer, which was translated back into Hebrew. A new astronomical instrument is described in this work–the so-called *quadrans novus*, as distinct from the *quadrans novus* of Robert the Englishman (*ca*. 1276) and the tenth-century *vetustissimus*. Examples of the *quadrans votus* have been preserved, and it apparently was much used in its time. It consists of a simplification of the face of the astrolabe by means of two successive rebates that have as their axes the north-south and east-west lines. Whatever connections may exist between this apparatus and similar instruments used by the Arabs have not been clearly established.

The *Almanac* is calculated for Montpellier and dated 1 March 1300 (1301 a.d.). In his prologue Ibn Tibbon notes that he was inspired by the almanac of King Tolomeus, which had been corrected by al-Zarqālī. Those corrections were insufficient, however, and, in addition, introduced new errors. For instance, al-Zarqālī did not take into account that some calculations had been made according to the Coptic calendar. Ibn Tibbon explains that he has followed the method of his predecessors, using the Toledan Tables as a basis; this is not quite correct, however, since his work is actually based on al-Zarqālī's completion of Ammonius' treatise on the almanac. But this distinction between tables and almanac was not usual; and for that reason several writers, among them Andalo di Negro, believed that Ibn Tibbon had used the Alfonsine Tables as a basis, since the prologue was not consistent with the tabular part of the work. The only exception to that model is the collection of lunar tables, inspired by those of al-Khwārizmī, known through al-Zarqālī. In the subsequent development of the work, Ibn Tibbon limits himself to the calculation of ephemerides and modifies the constant to be added at the end of the cycles. Later astronomers-Andalo di Negro, Levi been Gerson, Abraham Zacuto-found errors that they corrected.

Ibn Tibbon's astronomical work was very highly regarded during the Renaissance and was cited by Copernicus, Reinhold, Clavius, and Kepler.

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