dilemma of giving all the information he had at hand or a text that was easy to read but omitted most of the details. Although, due to his full command of the subject, the amount of information was enormous and he risked overwhelming the reader with numerous unavoidable cross references, fortunately, he opted to provide the reader with all the details, thus considerably enlarging the range of the readership.

In conclusion, this is not only a richly illustrated book but also a masterly comprehensive survey, a work full of insights and references to materials for further research and unsolved problems put forward for disscusion. It deserves not only to be read and appreciated but also to be used as a reference work, for this was one of the aims of the author in including all these materials in the book. In the author's words "all the investment of time and energy may have been worthwhile if others find that just reading about discoveries amongst unresearched historical materials excites them too". I am sure this will be the case for most of the future readers of this book, which is strongly recommended.

Mercè Comes

Jan P. Hogendijk (ed.) *Die Schrift des Ibrāhīm b. Sinān b. Thābit über die Schatteninstrumente. Übersetzt und erläuted von Paul Luckey*. Islamic Mathematics and Astronomy, 101, Institut for the History of Arabic-Islamic Science at the Johann Wolfgang Goethe University, Frankfurt am Main, 1999. XVI + 283 pages.

Jan P. Hogendijk has edited a part of Paul Luckey's Ph. Dissertation on Ibrāhīm ibn Sinān's (907-946) treatise on shadow instruments. Let us say, first, that Paul Luckey was one of the most important historians of Arabic-Islamic mathematics in the 20th century, whose work may not have received the recognition it deserves, due to the circumstances in which he lived, and the course of Germany history in the first half of the ending century. Paul Luckey was a mathematician born in 1884, in Eberfeld near Wuppertal, where he worked for several years as a high school teacher. During a later teaching period in Marburg, from 1924 to 1932, he published some papers on the teaching of mathematics in German journals of education. He also authored a long paper on ancient Egyptian geometry in the international journal *Isis*, and, between 1938 and the date of his death (1949), Luckey published six articles on the history of Arabic mathematics. Three more appeared between 1950 and 1953.

Luckey retired early, at the age of 47, and spent several years studying Arabic and preparing his Ph. D. He defended his dissertation (edited by J. P. Hogendijk) in 1941 at the University of Tübingen. The work dealt with Ibrāhīm ibn Sinān's shadow instruments treatise. The dissertation was not published in full, but only summarized at this time; the edition of Ibn Sinān's Arabic text was not included in the dissertation and, though if prepared by Luckey, it was only recently found among his papers in the Orientalisches Seminar in Tübingen. Luckey included an introduction to the cultural atmosphere of the Sābians of Harrān, the region where the family of Ibrāhīm ibn Sinān lived, and details on the scientist's lineage, biography and works. He also reviewed the Ancient and Arabic theory on sundials and gnomonics from the works of many of historians of science such as Schoy, Schmalzl, Wiedemann, Frank, Garbers, and

Sédillot, who paid special attention to the subject in the first decades of the century. Most part of the work was devoted to the study of Ibrāhīm ibn Sinān's text on the shadow instrument, preserved in the Codex Aya Sophia 4832. The Arabic text edition in this volume has been prepared by J.P. Hogendijk, who presents it together with Luckey's German translation. The volume prepared by Hogendijk also contains the edition of three more short Arabic texts, from the 9th century, and the corresponding German translations, such as "On the construction of the azimuth on the sphere", and "Geometrical construction of a horizontal sundial" both by Abū Yūsuf al-Kindī, (and part of the "Treatise on the knowledge of the azimut for any hour and for any locality" by Abū ʿAbd Allāh al-Māhānī, discussed by Luckey in his dissertation. J.P. Hogendijk has completed the edition and translation of the last one.

Hogendijk's book also contains an editor's introduction with some bibliography about Luckey: a complete list of his publications, mainly printed in the *Zeitschrift für mathematischen und naturwissenschaftlichen Unterricht*, the *Zeitschrift für angewandte Mathematik und Mechanik*, the *Unterrichtsblätter für Mathematik und Naturwissenschaften* and the *Fortchritte der Mathematik*; and the author's comments on Ibn Sinān's treatise in the context of the history of Arabic mathematics. Hogendijk's edition gives a facsimilae of the Istanbul manuscript with Ibrāhīm ibn Sinān's original figures; he also reproduces Luckey's figures in his translation and commentary adapted to the modern reader. One of the main points of interest in Ibn Sinān's theory of sundials was his attempt to prove that the hour lines in the plane of a horizontal sundial are not straight lines, as was believed by many authors from the Ancient times up to the 19th century. As Luckey and Hogendijk indicate, Ibn Sinān's treatise has not survived, but it was available to Ibn al-Haytham (ca. 965-1040), who also wrote on hour lines. Hogendijk read Ibn al-Haytham's treatise preserved in Istanbul and confirms Luckey's conjecture on the incompleteness of Ibn Sinān's proof of the theorem of hour lines.

Mercè Viladrich