1187). The variant readings introduced by Kunitzsch and Lorch were decided by reference to the Arabic version. They also followed Gerard's lettering of the diagrams.

Theodosius' *De habitationibus* consists of 12 propositions, each of them structured as follows: statement, diagram, example, mathematical proof, and, although not always, the author's commentary introduced by lat. *Dico* (Ar. *fa-aqūlu*). The content deals in particular with the astronomical phenomena observed in places of habitation, that is, *locis in quibus morantur homines* or *masākin*, at extreme latitudes.

The critical edition is masterfully executed and the translation, with a wealth of footnotes, is excellent, as one would expect from these authors. We strongly recommend this book to readers.

Roser Puig

Paul Kunitzsch and Richard Lorch, *Theodosius,* Sphaerica. *Arabic and Medieval Latin Translations*, Boethius, Franz Steiner Verlag, Stuttgart, 2010. 431 pp.

In the last few years, Paul Kunitzsch and Richard Lorch have been working on the enormous task of publishing critical editions of the works of Theodosius in their Arabic and Latin translations. In this issue of *Suhayl,* readers will find a paper by these two scholars on the *De diebus et noctibus* as well as a review of their edition of *De habitationibus* (München, 2011). Here I concentrate on the most important of these publications, the edition of the *Sphaerica*.

The volume contains, on facing pages, the Arabic text and the Latin translation by Gerard of Cremona (pp. 11-311), with an introduction (pp. 1-10), an edition and translation of the notes (marginal, in the text and in a half page) by Abū l-Ḥasan b. Saʿīd in a manuscript from a private library in Lahore (pp. 313-315), an edition and translation of a series of lemmas (extant in mss. Istanbul, Seray, Ahmet III 3464, Paris BnF hebr. 1101 and several Latin mss., among them Paris BnF lat. 9335), related to an inequality stated by Theodosius, without proof, in proposition 11 of the third book, as well as notes added in the Latin translation to proposition 11 of the second book (pp. 316-327), and a careful collection of notes on the manuscript tradition of the geometrical diagrams (pp. 328-341). The volume ends with a "Mathematical summary" (pp. 343-427), which is, in fact, almost an English translation of the book in which the propositions are translated in full and the proofs are formulated in modern notation with notes that compare the Arabic and Latin translations with the Greek original. At the end of the volume there is a complete bibliography (pp. 429-431).

As explained in the introduction, Theodosius' *Sphaerica* is one of the middle books (*al-mutawassiṭāt*) that

should be read between Euclid's *Elements* and Ptolemy's *Almagest*. As for the author of the Arabic translation, the manuscripts propose different names: Thābit b. Qurra, Ḥunayn b. Isḥāq and Qusṭā b. Lūqā. A more detailed description of the process of translation is to be found in the recension of the *Sphaerica* (1253) by Naṣīr al-Dīn al-Ṭūsī, who states that Caliph al-Mustaʿīn (862-866) commissioned the translation of the book to Qusṭā b. Lūqā, who reached proposition five of the third book. The task was finished by another scholar and Thābit b. Qurra revised the translation.

The edition of the Arabic text is based on three manuscripts of which one (the aforementioned Lahore ms.) was copied in 1158, in Mosul from another copy belonging to a direct descendant of Thābit b. Qurra. The colophon of the same manuscript states that al-Ḥasan b. Saʿīd (the author of the notes edited on pp. 313-315) thoroughly revised all the figures in the treatise, in 1030, because they were corrupt in the manuscript he was copying (see pp. 3-4 and 310-312). In the same colophon, the copyist says that the three books of the *Sphaerica* contain 59 propositions (*ashkāl*): but in the edited text there are 11 definitions and 22 propositions in Book I, one definition and 22 propositions in Book II and, finally, 14 propositions in Book III: the total number of propositions should, therefore, be 58, instead of 59.

The Latin translation has been edited using 11 manuscripts and it seems entirely accurate and faithful to the Arabic original. I have only been able to find the use of one Arabic word in the Latin text: *meguar* for *miḥwar* (axis) on p. 13. This implies that the technical Latin vocabulary had reached a standard level by the time of Gerard of Cremona. The only peculiar characteristic of the Latin text is the systematic use of *equidistans* and related terms to translate "parallel" (*muwāzin*): see pp. 87, 99, 103,105 etc.

To summarize: both the Arabic and the Latin critical editions of Theodosius' work are excellent examples of good scholarship. The texts are very well edited and printed and are a pleasure to read. During the last few years a number of Arabic scientific texts have been edited with their corresponding Latin translation: this is precisely the kind of materials we need in order to have a clear picture of the techniques used by medieval translators.

Julio Samsó

Jafar Aghayani-Chavoshi, *Ketâb al-nejârat (Sur ce qui est indispensable aux artisans dans les constructions géométriques)* Tehran: Written Heritage Research Centre & Institut Français de Recherche en Iran, 2010. 79 + 136 pp. (Persian) and 279 pp. (French). Introduction by Bernard Vitrac. Bibliothèque Iranienne 71.