Rashed, Roshdi. **Les mathématiques infinitésimales du IXe au XIe siècle. Vol. 3. Ibn al-Haytham: Théorie des coniques, constructions géométriques et géométrie pratique.** *Al-Furqān Islamic Heritage Foundation,* London, 2000. xviii+1034+v pp. ISBN 1-873992-59-9.

This book contains Arabic editions and French translations with commentary of the following texts by the medieval Islamic mathematician Ibn al-Haytham (ca. 965-1041):

(1) (pp. 1-272, 909-911) The *Completion of the Conics,* a reconstruction of the lost Book VIII of the *Conics* by Apollonius of Perga, previously published by the reviewer [Ibn al-Haytham's *Completion of the Conics,* Springer, New York, 1985]. For a detailed analysis of Rashed's new edition see the reviewer's paper [Two editions of Ibn al-Haytham's Completion of the Conics, *Historia Math.* 29 (2002), no.3, 247-265].

(2) (pp. 273-321) The *Correction to a lemma by the Banū Mūsā* (early ninth century), related to Book VI of the *Conics* of Apollonius. The Arabic text was previously published in Ibn al-Haytham's *Rasā'il*, Osmania Oriental Publ. Bureau, Hyderabad, 1938 (1357 A.H.)]; for a German translation of the first part of the text see pp. 14-16 of [E. Wiedemann, Über eine Berichtigung von Ibn al-Haiṯam zu einem Satz des Benû Mûsâ, pp.14-16 in Beiträge zur Geschichte der Naturwissenschaften 17, Sitzungsberichte der Physikalisch-medizinischen Sozietät zu Erlangen 41 (1910), 1-25]. The lemma of the Banū Mūsā was published with English translation in [Apollonius of Perga, *Conics. Books V-VII, The Arabic translation of the lost Greek original in the version of the Banū Mūsā,* Volume I: Introduction, text and translation, Edited with translation and commentary by G. J. Toomer, Springer, New York, 1990; (pp. 646-649)]. Another edition of the lemma and Ibn al-Haytham's treatise is in [A. I. Abdul-Latif, *Ibn al-Haytham* (Arabic), Univ. Jordan, Amman, 1993; (pp. 148-201)]. See also [J. P. Hogendijk, in *Tradition, transmission, transformation* (Norman, OK, 1992/1993), 31-64, Brill, Leiden, 1996; (pp. 39-41)].

(3, 4) (pp. 323-420, 429-433, 437-489) Two treatises on the regular heptagon, previously published in [R. Rashed in La construction de l'heptagone régulier par Ibn al-Haytham, *Journal for the History of Arabic Science* 3 (1979), no. 2, 387-309.] In this earlier paper, Rashed argued that Ibn al-Haytham's construction of the regular heptagon by means of two parabolas is defective, but on pp. 390-391 of the book under review, he accepts the explanation in [J. P. Hogendijk, Greek and Arabic constructions of the regular

heptagon, *Archive for History of Exact Sciences* 30 (1984), no. 3-4, 197-330; (pp. 226-231)]. This paper also contains descriptions in English of all other known medieval Islamic texts on the regular heptagon, which Rashed has edited in Arabic with French translations in a long appendix (pp. 647-898, 914-919) of the book under review. See also the chapter on the regular heptagon on pp. 203-259 of the book of Abdul-Latif (in Arabic) mentioned above.

(5) (pp. 421-425, 433-435, 490-495) The *Treatise on the division of a segment used by Archimedes in On the sphere and cylinder II:4.* This treatise was summarized by F. Woepcke in *L'algèbre d'Omar Alkhayyāmī,* Duprat, Paris, 1851 (pp. 91-93). In two appendices, Rashed has also edited the following related texts, summarized by Woepcke on pp. 93-103 of his work: (pp. 911-913) an anonymous Arabic neusis-construction of the problem, and (pp. 919-934) a related text on a cubic equation, which can be attributed to al-Kūhī (10th century).

(6) (pp. 425-429, 435, 496-535) *On a solid numerical problem*, previously translated in [J. Sesiano, Mémoire sur un problème arithmétique solide, *Centaurus* 20 (1976), no. 3, 189-195].

(7) (pp. 505-526, 530-532, 537-637) *On the principles of measurement,* a treatise on the practical determination of areas of figures and volumes of solids. Only the last part of the treatise (pp. 608-635) was hitherto known to be extant; see the German translation in pp. 16-24 of the paper by Wiedemann mentioned in (2) above.

(8) (pp. 526-527, 532-534, 638-641) *On the knowledge of the height of vertical objects, the altitude of mountains and the altitude of clouds.* A German translation can be found in [H. Suter, Einige geometrischen Aufgaben bei arabischen Mathematikern, *Bibliotheca Mathematica* (3) 8 (1907), 23-36].

(9) (pp. 527-530, 534, 641-645) *On the determination of the altitude of mountains*, previously unpublished. In an appendix (pp. 899-905) Rashed edits a related and hitherto unpublished text by Sinān ibn al-Fatḥ (9th-10th century) and a fragment by al-Qabīṣī (10th century), previously published in [A. Anbouba , Un m emoire d'al-Qabīṣī (4e siècle H.) sur certaines sommations numériques, *Journal for the History of Arabic Sciience* 6 (1982), no.1-2, 181-208].

The book ends with indices and addenda to Volume II of the same series.