The book under review is a translation into French, with a commentary, of a book on arithmetic algebra that was written by the Islamic twelfth-century mathematician al-Samaw’al. The book carries the title of *al-Bāhir fī al-Jabr*, which means *The brilliant book of algebra*, and it comes at the end of a period of three centuries that followed the appearance of al-Khwārizmī’s celebrated book *al-Jabr wal-Muqābala*. That period witnessed a rapid development of algebra that was concentrated on arithmetic algebra and indeterminate analysis, on the one hand, and on elementary algebraic geometry, on the other. The rich list of Islamic mathematicians who lived in that period and contributed to that development included Abū Kāmil, al-Karajī, al-Khayyām, Sharaf al-Dīn al-Ṭūsī, al-Samaw’al, and others.

Besides translating al-Bāhir and detecting and correcting hundreds of spelling, grammatical, and other kinds of errors that presumably have been made by copyists, the editor starts with a short preface containing a brief history of Islamic algebra between al-Khwārizmī and al-Samaw’al and a description of what motivated the writing of the book under review, followed by a detailed and valuable 71-page summary of the contents of al-Bāhir using modern notations and terminology, as opposed to the rhetorical style of al-Samaw’al (and his contemporaries). Then follows the 240-page Arabic text of al-Bāhir, with translation into French on facing pages. The text starts with a table of contents of the four books that constitute al-Bāhir. These four books are divided into chapters and sections, and they carry the following titles: (i) multiplication, division, and extracting roots, (ii) determination of unknowns, (iii) irrational quantities, and (iv) classification of problems (into necessary, possible, and impossible). Among many other things, these books contain a variety of quadratic and cubic Diophantine equations in two unknowns, a lot of interesting formulas for certain finite sums that are proved by mathematical induction, and instances of the binomial theorem. On page 102, we find the table that illustrates the binomial theorem that is now known as Pascal’s table. It is the same table of the binomial coefficients that is reproduced on the front cover of the [Notices Am. Math. Soc. 60 (2013)].

The editor is to be commended on the great job he has done.

Reviewer: Mowaffaq Hajja (Amman)

MSC:

01A30 History of mathematics in the Golden Age of Islam

Keywords:

Islamic algebra; early appearance of mathematical induction; origin of binomial theorem; Diophantine equations

Biographic references:

Al-Bāhir d’al-Samaw’al; Leonardo of Pisa; al-Khwārizmī, Muḥammad ibn Mūsā

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