Muhammad ibn Musa al- Khwarizmi Biography

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Biography

Muhammad ibn Musa al-Khwarizmi (died ca. 850) was a Moslem mathematician, astronomer, and geographer and one of the most seminal scientific minds of early Islamic culture.

Al-Khwarizmi flourished at the court of the Abbasid caliph al-Mamun (reigned 813-833), whose interest in science and philosophy gave great impetus to scholarly investigation and to a copious translation movement from Greek via Syriac into Arabic. Very little is known of al-Khwarizmi's life, although his name indicates at least a family origin in the Persian culture of the Oxus River (Amu Darya) delta. He may have been attached to al-Mamun's scientific academy in Baghdad, the House of Wisdom (Arabic, *Bayt al-Hikma*), and it is probable that he participated in the calculation of the length of a degree of latitude, which took place during al-Mamun's reign.

To al-Khwarizmi we owe the world "algebra," from the title of his greatest mathematical work, *Hisab al-Jabr wa-al-Muqabala* (Calculation for Integration and Equation). The book, which was twice translated into Latin, by both Gerard of Cremona and Robert of Chester in the 12th century, works out several hundred simple quadratic equations by analysis as well as by geometrical example. It also has substantial sections on methods of dividing up inheritances and surveying plots of land. Al-Khwarizmi was one of the early popularizers in the Islamic world of the numeral system, which, along with the zero concept, is called Arabic in the West but which was borrowed at about this time from India. A technical term for the Arabic numerals, no longer much in use, is derived from the very name al-Khwarizmi: algorism.

Al-Khwarizmi also wrote a treatise on arithmetic which has survived only in a medieval Latin translation; Arabic bibliographies of the period mention two books by him on the astrolabe and one on sundials, although none of these seems to have come down to us. Al-Khwarizmi also compiled the first astronomical tables known in the Moslem world. They were translated into Latin, together with their lengthy introduction, by Adelard of Bath in 1126.

Of great importance also was al-Khwarizmi's contribution to medieval geography. His improvement upon Ptolemy's work is entitled *Surat al-Ard* (The Shape of the Earth). The text exists in a manuscript; the maps have unfortunately not been preserved, although modern scholars have been able to reconstruct them from al-Khwarizmi's descriptions.