Transmission of Indeterminate Equations
As Seen in an Istanbul Manuscript
of Abū Kāmil

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Abū Kāmil was one of the most creative mathematicians in the medieval Arabic world. It is to his credit that he saw the necessity in his time of fusing the more theoretical Greek approach with the more practical Babylonian algebra. It was in this manner that abū Kāmil proved himself to be a true innovator. As a result of his mathematical procedures, his successors were in a position to forge ahead without profound philosophical difficulties.

Abū Kāmil Shujāᶜ ibn Aslam ibn M. ibn Shujāᶜ (c. 850–930), "the reckoner from Egypt," was the product of a period of intellectual ferment in the Golden Age of the Arabs. After al-Khwārizmī (ca. 825), abū Kāmil is the earliest algebraist of the Islamic period whose writings are still extant. As a result of a different approach to mathematics, abū Kāmil's algebra is much advanced over that of the practical al-Khwārizmī whose roots are almost entirely Babylonian. A comparison of abū Kāmil's *Al-jabr wa'l-muqābala* with the book of the same title by al-Khwārizmī demonstrates the evolution of algebraic method in a fruitful direction.[1] A work of abū Kāmil which contains some indeterminate equations is the *Kitāb al-ṭarāʾif fi'l-ḥisāb*. "Book of Rare Things in the Art of Calculation." These problems which show progress are concerned with integral solutions of linear equations.

Another work of abū Kāmil goes more deeply into algebra with solutions for fourth degree equations and for mixed quadratics with irrational coefficients. Only the Latin and Hebrew texts had been known. The Arabic of this text was discovered by Levey in Istanbul in the important Kara Mustafa Library MS 379 as the second treatise.[2]