Thabit Ibn Qurra Encyclopedia Article

Thabit Ibn Qurra

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Thabit Ibn Qurra

836-901

Syrian Mathematician

Not only was his writing on amicable or friendly numbers the first notable example of original mathematical work in the Middle East, but Thabit ibn Qurra distinguished himself with his translations of major writings by the mathematicians of Greek antiquity. He also translated works of astronomy, adding his own ideas to Ptolemy's concepts of the spheres, and discussed mechanics.

Al-Sabi Thabit ibn Qurra al-Harrani, born in the town of Harran in what is now Turkey, was not an Arab or a Muslim. Rather, his people spoke Syriac and were members of the Sabian sect. The Sabians worshipped the stars, and thus Thabit grew up in a situation particularly suited to a future mathematician with an interest in astronomy. In addition, the Sabians were strongly influenced by Greek culture, and Thabit became proficient both in Greek and Arabic.

A member of a wealthy family who inherited a handsome fortune, Thabit left his home-town to study mathematics in Baghdad. There he revised a translation of Euclid's (c. 325-c. 250 B.C.) *Elements* by Hunayn ibn Ishaq (808-873). Though two earlier translations had been made by al-Hajjaj (661-714) in addition to Hunayn's, Thabit's would become the definitive one.

Thabit translated a number of important works, and performed numerous original studies as well. His writings on ratios helped pave the way for the generalization of numbers, and many of his ideas may be seen as precursors to such later developments as number theory, spherical trigonometry, analytic geometry, integral calculus, and non-Euclidean geometry. In his *Book on the Determination of Amicable Numbers,* he discussed formulae for determining perfect and amicable numbers, and was reputedly the first to discover the amicable pair 17296, 18416.

Other writings of Thabit's include a treatise on the application of the Pythagorean theorem to an arbitrary triangle, as well as an astronomical study, *Concerning the Motion of the Eighth Sphere,* in which he stated incorrectly that there is an oscillation in the motion of the equinoxes. His *Kitab fi'l-qarastun* (The book of the balance beam) was a well-known work on mechanics. Thabit also wrote on philosophy and other subjects. He died on February 18, 901 in Baghdad.