Biographical Encyclopedia of Astronomers

Apollonius of Perga

Flourished Alexandria, (Egypt), circa 247-205 BC

Apollonius laid two foundations, one in astronomy and the other in mathematics

Ancient sources have Apollonius flourishing in the reign of Ptolemy Euergetes (Ptolemy III: 247–222 BCE) and Ptolemy Philopator (Ptolemy IV: 222–205 BCE). He was born in Perga (near the southern coast of what is now Turkey) and moved to Alexandria, where he spent his working life. The move to Alexandria may have been spurred by Euergetes' naval forces conquering the coastal regions all the way to the Hellespont early in his reign, which made Alexandria the capital of the entire eastern Greek world

In astronomy, Ptolemy used Apollonius as his authority on epi-cycles and eccentrics to account for the apparent motions of the planets. The propositions cited by Ptolemy as proven by Apollonius show mathematically at what points the planet appears stationary, switching from apparent forward to apparent retrograde, and vice versa.

In mathematics, Apollonius's Conics give us the concept and nomenclature for ellipse, parabola, and hyperbola. These curves originate with the mental exercise of pushing a plane through a cone and contemplating the shape of the intersection. Apollonius found a new generalized way to describe the properties of all three conic sections and went on to discuss a number of problems connected with them. The Conics were originally in eight books; books I–IV survive in the original Greek, and books V–VII survive in Arabic. They were studied by Arab astronomers and by Johannes Kepler, René Descartes, Edmund Halley, and Isaac Newton.

Thomas Nelson Winter

Selected References

Apollonius (1710). Conic Sections, edited by Edmund Halley. Oxford.

Opera, edited by Heiberg. 2 vols. Leipzig: Teubner, 1891, 1893.

(1998). Conics, Books I–III, translated by R. Catesby Taliaferro. Diagrams by William H. Donahue. New rev. ed. Santa Fe: Green Lion Press.

(2002). Conics, Book IV, translation, introduction, and diagrams by Michael N. Fried. 1st English ed. Santa Fe: Green Lion Press.

Cohen, Morris R. and I. E. Drabkin (eds.) (1958). A Sourcebook in Greek Science.

Cambridge, Massachusetts: Harvard University Press.

Heath, Sir Thomas L. (1921). A History of Greek Mathematics. 2 vols. Oxford:

Clarendon Press. (Reprint, New York: Dover, 1981.)

Neugebauer, Otto (1975). A History of Ancient Mathematical Astronomy. 3 pts.

New York: Springer-Verlag