Biographical Encyclopedia of Astronomers

Theon of Smyrna

Born circa 70

Died circa 135

Known as "Theon the mathematician" by Ptolemy, "the old Theon" by Theon of Alexandria, and "Theon the Platonist" by Proclus, Theon is best remembered as the author of a handbook on Pythagorean harmony, and for several widely cited observations of Mercury and Venus Recorded by Ptolemy, these observations (127, 129, 130, and 132) were later used to determine the maximum elongation of the inferior planets. They also confirm Theon's flourishing dates; an extant stone bust fixes his death before 140. Nothing certain is known of his life, education, and related writings. Theon's most influential extant writing, *Theonis Smyrnaei Platonici Eorum, quae in Mathematicis ad Platonis lectionem utilia sunt* (*Expositio*), was first translated from Greek to Latin by Ismaël Boulliau, the noted French astronomer (Theon of Smyrna the Platonist, exposition of the works on mathematics useful for reading Plato, Paris 1644, Bks I and II).

Now consisting of three extant books (Arithmetic, Music, and Astronomy), Theon's *Exposition* was designed to introduce general readers to the Cosmic Harmony that binds the mathematical and natural worlds, thus opening a path (if not a royal road) to understanding Plato's philosophy. It is not an original or technically demanding work. Instead, it moves simply but elegantly from number to arithmetic, geometry, music, and astronomy to the Harmony of the World. In practice, Theon begins by defining numbers, prime and geometrical, finally focusing on more sophisticated ratios, proportional ratios, and progressions. By tradition, the principal value of the *Exposition* is not its originality but its use as a historical source concerning ancient writers and lost texts

Yet Theon's treatise can no longer be viewed simply as an ancient text. Seldom discussed, Boulliau's translation of the *Exposition* marked something of a modern revival in the wake of Johannes Kepler's harmonic conjectures. Pythagorean speculations about the Harmonies of the World were of particular interest, especially the kinds of numbers: odd and even, prime and composite, square and oblong, circular and spherical, pyramidal and perfect. In Book II, Theon's treatment of music addressed not only the mathematical relations between intervals but the role of ratios in eccentric and epicyclic constructions. The resonance with Kepler is obvious. But if Theon's main interest was Cosmic Harmony, Part Three draws together his central themes. Echoing Adrastus, Theon begins with a systematic introduction to the elements of astronomy, the ordering of the planets, their retrograde motions (discussing epicyclic and homocentric models), and finally, the problem of planetary distances, which Theon skillfully plays against musical intervals of the octave. More generally, the "harmony of the world" is rooted in number and proportion, which govern all bodies and movements. Theon's concluding discussion of planetary motion on the surface of geometrical solids—on parallel circles and in spirals—suggests possibilities later explored and exploited by the New Science.

Theon's other works on astronomy and mathematics are lost, among them commentaries on Ptolemy and Plato's *Republic*, and reportedly, a history of Plato's ancestry. Principal manuscripts of Theon's *Exposition* (Greek) are found in Paris, Venice, Florence, Naples, and Rome; reports suggest an Arabic version has recently been uncovered Published editions of the *Exposition* have appeared piecemeal over the last three centuries. Following Boulliau's edition of Book I (Arithmetic) is J. J. de Gelder (Book I, Greek & Latin, Leiden 1827). Book II (Music) has not been retranslated into Latin; Book III (Astronomy) is in an edition by T. H. Martin (Greek & Latin, 1849; Gröningen 1971). The first complete Greek edition is Eduard Hiller (Books I-III, Greek, Leipzig 1878). The first complete translation was J. Dupuis (Books I-III, Greek and French, Paris 1892) and most recently, Joëlle Delattre (Greek-French). No complete English translation (from Greek or Latin) exists.

Robert Alan Hatch

Selected References

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