Manfredi, Eustachio | Encyclopedia.com

(*b*. Bologna, Italy, 20 September 1674; *d*. Bologna, 15 February 1739)

astronomy, hydraulics.

A well-known poet as well as scientist, Manfredi was the eldest son of Alfonso Manfredi, a notary originally from Lugo (near Ravenna), and Anna Maria Fiorini. Encouraged by his father to study philosophy while attending Jesuit schools, he took a degree in law in 1692 but never practiced it. Having shown an early preference for science, he studied mathematics and hydraulics with Domenico Guglielmini and began to study astronomy by himself. By 1690 he had founded his own scientific academy, the Inquieti, a private institution that in 1714 became the Academy of Sciences of the Institute of Bologna. In 1699 Manfredi became lecturer in mathematics at the University of Bologna; but obliged by family financial difficulties to accept two positions, in 1704 he became head of a pontifical college in Bologna and then superintendent of waters for the region, a post he retained until his death. He was relieved from the first post in 1711 by his appointment as astronomer of the recently founded Institute of Sciences.

In 1715 Manfredi completed his two-volume *Ephemerides motuum coelestium* for 1715–1725, based on the still unpublished tables of Cassini in Paris, his predecessor in the chair of astronomy at Bologna. Intended, unlike most of its predecessors, not for astrological use but for practical astronomy, the ephemerides were of unusual extent and practicality. They included tables of the meridian crossing of the planets, tables of the eclipses of the satellites of Jupiter and of the conjunction of the moon and the principal stars, as well as maps of the regions of the earth affected by solar eclipses. The ephemerides were preceded by a volume of instructions including tables that were reprinted by Eustachio Zanotti in 1750. In 1725 Manfredi published a similar, highly successful work for the period 1726–1750 that in some ways anticipated the *Nautical Almanac* (1766).

Soon after his appointment as astronomer, Manfredi calculated the latitude and longitud of the new observatory at Bologna by following the polar star with two mobile quadrants and an eight-foot wall semicircle; the three series of observations confirmed his results obtained in other parts of the city. With a team of assistants that included Francesco Algarotti he carefully measured the annual motion of several fixed stars chosen at various ecliptical latitudes, in order to confirm and identify precisely their apparently elliptical orbits. Although he recognized that the phenomenon could not be a parallactic effect—a conclusion he had apparently reached in 1719—he did not publish on it until 1729, the year in which Bradley gave the exact explanation: the first astronomical evidence of the earth's revolution and a confirmation that the value of the velocity of light, although extremely great, is finite. Manfredi regarded these explanations as insufficiently tested hypotheses and remained, like Cassini and certain other contemporary astronomers, a lifelong adherent of the geocentric and geostatic conception of the world. The phenomenon is still known as the annual aberration of fixed stars, the name Manfredi gave it in the title of *De annuis inerrantium stellarum aberrationibus* (1729).

In 1736 Manfredi published *De gnomone meridiano Bononiensi ad Divi Petronii [templum]*, for which he had been collecting material since his youth. The work also included a history and description of Cassini's meridian and observations made on the solar "species" since the instrument had been introduced in 1655. These observations are of meteorological as well as astronomical interest. The following year Manfredi published *Astronomicae as geographicae observationes selectae* by Francesco Bianchini of Verona, after patiently organizing and completing his notes.

Most of Manfredi's many publications appeared in Latin in the proceedings of the Academy of Sciences of Bologna and in French in the *Mémoires* of the Académie des Sciences, in which he published his observations and descriptions of solar and lunar eclipses, comets, transits of Mercury, and an aurora borealis. Other works appeared posthumously in Italian and considerably updated older treatises in Latin, which was always less used.

Manfredi had ordered for his observatory the latest astronomical instruments from England, but they did not arrive until two years after his death from kidney and bladder stones. Manfredi was a foreign member of the Académie des Sciences (1726) and a member of the Royal Society of London (1729). Recognition of his mastery of the Italian language was expressed by his membership in the Accademia della Crusca of Florence (1706), an honor then reserved almost entirely for Tuscans.

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