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(b. Venice, Italy, 23 August 1683; d. Padua, Italy, 15 November 1761)

*mathematics, physics, engineering, ancient history, archaeology.*

Poleni was the son of Jacopo Poleni and carried his title of marquis of the Holy [Roman Empire](#), conferred by Emperor Leopold I and confirmed in 1686 by the Republic of Venice. In his early life he followed a variety of studies, and his intellectual endowment was soon known to be extraordinary. After completing his studies, first in philosophy and then in theology, at the school of the Padri Somaschi in Venice, he began, with his parents' encouragement, a judicial career. At the same time his father introduced him to mathematics and physics, and it became clear that the natural sciences were going to be his most prominent field of activity.

At the age of twenty-six he married Orsola Roberti of a noble family of Bassano del Grappa and accepted the chair of astronomy at the University of Padua; six years later he became professor of physics as well. The Venetian Senate invited him to investigate problems of hydraulics pertinent to the irrigation of lower Lombardy, Poleni soon acquired such proficiency in this field that he became the accepted arbiter of all disputes between states bordering on rivers. In 1719 he assumed the chair of mathematics at the University of Padua left vacant by Nikolaus I Bernoulli, upon the latter's return to Basel. His noteworthy opening lecture was published in 1720 as *De mathesis in rebus physicis utilitate*.

In 1738 Poleni established within a few months an up-to-date laboratory of experimental physics and began to lecture on that subject. He simultaneously conducted meteorological observations, corresponded with French, English, German, and Italian savants (particularly Euler, Maupertuis, the Bernoullis, and Cassini III), published memoirs on various subjects, and participated in the study of calendar reform that had been sponsored by Pope [Clement XI](#). In 1733 Poleni received a prize from the Royal Academy of Sciences of Paris for a paper on a method of calculating—independently of astronomical observations—the distance traveled by a ship; and in 1736 he was awarded a prize for a study of ships' anchors. In 1739 he became a foreign member of the Academy, and in 1741 he received a prize for a study of cranes and windlasses.

Poleni's scientific activities were paralleled by classical researches, which were described in treatises on the temple of Ephesus, on ancient theaters and amphitheaters, on French archaeological findings, on an Augustan obelisk, and on several architectural topics. In 1748 he was called to Rome by Pope [Benedict XIV](#) to examine the cupola of St. Peter's basilica and to propose means of preventing its further movement, but he was soon recalled to Padua to assume judicial duties. Excessive work gradually affected his health, although not his enthusiasm, until his death at the age of seventy-eight. His remains were laid in the Church of St. Giacomo in Padua, where his sons placed a monument in his honor. The citizens of Padua subsequently decreed that a statue (one of the earliest works of [Antonio Canova](#)) of Poleni be placed among those of illustrious men in the Prato della Valle. A medal in his honor was struck by the Republic of Venice.

## BIBLIOGRAPHY

I. Original Works. Poleni's earliest paper was *Miscellanea: de barometris et thermometris; de machina quadam arithmetica; de sectionibus conicis in horologiis solaribus describendis* (Venice, 1709). A treatise on assorted topics, it includes a dissertation on barometers, which was followed by a second dissertation on this instrument, in *Giornale letterario d'Italia* (1711), and on thermometers, in which several improvements are proposed; also included is the design of an arithmetic machine based on reports that Poleni had received of those of Pascal and of Leibniz. Poleni actually built this machine, which was reportedly very simple and easy to operate; but when he heard of another machine presented to the emperor by the Viennese mechanician Brauer, he destroyed his own and never rebuilt it. A planned 2nd ed. of *Dialogus de vorticibus coelestibus* (Padua, 1712) was unrealized. His lecture, *De physicis in rebus mathematicis utilitate oratio* (Padua, 1716), was reprinted in 1720, with some observations by J. Erhard Kapp, in *Clarissimorum virorum orationes selectae* (Leipzig, 1722).

Poleni's works on hydraulics and hydrodynamics include *De motu aquae mixto libri duo* (Padua, 1717), which contains information on estuaries, ports, and rivers; and *De castellis per quae derivantur aquae fluviorum habentibus latera convergentia liber* (Padua, 1718), with reports on experiments on water flow and on the force exerted by an impacting fluid. On the same subject are his corrections on Frontinus' treatise, *L. Julii Frontini de aquaeductibus urbis Romae commentarius restitutus atque explicatus* (Padua, 1722), which were in large part incorporated in Rondelet's trans. (1820) of Frontinus' commentary. A paper combining astronomical and anatomical subjects followed in 1723: "Ad abbatem Grandurn epistolae duae de telluribus forma; observatio exlipsis lunaris Patavii anno 1723; et de causa motus musculorum." The memoir on the

solar eclipse of 1724, *Ad Johan. Jacob. Marinonum epistola in quo agitur de solis defectu anno 1724 Patavii observato* (Vienna, 1725), was reprinted in *Acta eruditorum Lipsensium* (Leipzig, 1725). A collection of Poleni's letters is in *Epistolarum mathematicarum fasciculus* (Padua, 1728), to which Poleni appended a now very rare short treatise by Giovanni Buteo, *Misura delle acque*.

Some studies of the ancient world followed: a collection of ancient writings, *Utriusque thesauri antiquitatum Romanarum Graecarumque supplementa* (Venice, 1735); a study of Vitruvius' work, *Exercitationes Vitruvianae, seu commentarius criticus de Vitruvii architectura* (Venice, 1739); and an architectural criticism, *Dissertazione sopra il tempio di Diana in Efeso* (Rome, 1742). A reply to an anonymous critic of the latter work appeared in *Giornale dei Dotti* (July 1748). A description of the means employed by Poleni for the restoration of the cupola of St. Peter's Church is found in *Memorie storiche della gran cupola del tempio Vaticano* (Padua, 1748). Other papers, too numerous to list, may be found in *Acta Lipsiensia*, in the memoirs of the Imperial Academy of Sciences at [St. Petersburg](#), and in *Transazioni filosofiche*.

II. Secondary Literature. Particulars about Poleni's life are in *Memorie per la vita, gli studi e i costumi del signor Giovanni Poleni* (Padua, 1762) and in his eulogy, which was inserted by Grandjean de Fouchy in the collection of Poleni's writing issued by the Academy of Sciences (1763) and by Fabroni in *Vitae Itatorum*, **XII**, no. 2 (1763). A good biography of Poleni is in *Biografia universale antica e moderna*, **XLV** (1828), and in the 2nd French ed. of the same work (Paris, 1854). A more detailed account of his life appeared in E. de Tipaldo, ed., *Biografia degli Italiani illustri* (Venice, 1834).

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