Bartholin, Erasmus | Encyclopedia.com

(*b*. Roskilde, Denmark, 13 August 1625; *d*. Copenhagen, Denmark, 4 November 1698)

mathematics, physics.

Erasmus Bartholin was the son of Caspar Bartholin (1585–1629) and the brother of Thomas (1616–1680). He matriculated at the University of Leiden in 1646 and remained in Holland for several years, studying mathematics. Later he traveled in France. Italy (he received his M.D. at Padua in 1654), and England. Upon his return to Copenhagen, Bartholin was appointed professor of mathematics in 1656 but transferred to an extraordinary chair of medicine in 1657 and to an ordinary one in 1671. He served the University of Copenhagen as dean of the faculty of medicine, librarian, and rector, and was appointed royal physician and privy councilor.

Bartholin wrote little on medicine, although he and his brother Thomas played some part in introducing cinchona bark to Denmark; he also contributed to the journal founded and edited by Thomas, *Acta medica et philosophica Hafniensia*.

His publications in pure mathematics were fairly numerous, but not of great importance. As an exponent of the Cartesian tradition, Bartholin's main interest was in the theory of equations; in this he was directly influenced by Frans Van Schooten. Besides his own works, he issued in almost every year from 1664 to at least 1674 a *Dissertatio de problematibus geometricis* consisting of theses propounded by himself and defended by his students.

Bartholin also worked in astronomy. Like many others, he observed the comets of 23 December 1664–9 April 1665. In this effort he was assisted by Ole Rømer. He did not reach a conclusion about the true orbits, for he was skeptical of all statements about either the place of comets in the heavens (including Tycho Brahe's) or their physical nature (including Descartes's).

Also in 1664 Bartholin began, at the direction of Frederick III of Denmark, to prepare for publication the collected manuscript observations of Tycho Brahe, which the king had bought from Ludwig Kepler. In this task he was again assisted by Rømer. The king's death prevented the project's completion, and its only result was Bartholin's critique of the imperfect *Historia coelestis* of Albert Curtz.

Bartholin's major contribution to science was undoubtedly his study of Icelandic spar (specially collected by an expedition sent to Helgusta it in Reyðarfyorðr, Iceland, in 1668). In physics, as in mathematics, Bartholin was a fervent admirer of Descartes (of whom he wrote: "Miraculum reliquum solus in orbe fuit"), as is evident in his attempt to deal with the newly discovered phenomenon of double refraction. Having shown that both rays (*solita* and *insolita*) are produced by refraction, and given a construction for determining the position of the extraordinary image, he argued that double refraction could be explained in the Cartesian theory of light by assuming that there was a double set of "pores" in the spar. This puzzling phenomenon proved to be of great theoretical interest to both Huygens and Newton. Bartholin was in fairly close touch with both French and German scientists and, through the latter (initially), with the Royal Society. The copy of his *Experimenta crystalli Islandici* that he sent to Henry Oldenburg is now in the British Museum; from it Oldenburg prepared an excellent English précis.

BIBLIOGRAPHY

I. Original Works. Bartholin's works are in *Francisci à Schooten Principia matheseos universalis* (Leiden, 1651); *Dissertatio mathematica qua proponitur analytica ratio inveniendi omnia problemata proportionalium* (Copenhagen, 1657), a monograph on harmonic proportionals ($2ac = ab + bc$) leading into a short discussion of the resolution of equations; a translation of a minor Greek optical text by Damianos, or Heliodorus of Larissa (Copenhagen, 1657); a completion of two papers of Florimond de Beaune as *De aequationum natura, constitutione & limitibus*, in Descartes's *Geometria* (Amsterdam, 1659); *Auctarium trigonometriae ad triangulorum sphaericorum et rectilineorum solutiones* (Copenhagen, *ca*. 1663/1664); and *Dioristice, seu Aequationum determinationes duabus methodis propositae* (Copenhagen, 1663). The *Dissertatio, Dioristice*, and *Auctarium* (and perhaps others) were issued under the title *Selecta geometrica* (Copenhagen, 1664). Also see *De cometis anni 1664 et 1665 opusculum* (Copenhagen, 1665); his critique of Albert Curtz's *Historia coelestis* (Augsberg, 1668) in *Specimen recongnitionis nuper editarum observationum astronomicarum N. V. Tychonis Brahe* (Copenhagen, 1668); and *Experimenta crystalli Islandici disdiaclastici quibus mira & insolita refractio detegitur* (Copenhagen, 1669). *De naturae mirabilibus quaestiones academicae* (Copenhagen, 1674) is a collection of reprinted essays and addresses (original dates in brackets): "The Study of the Danish Language" [1657], "The Shape of Snow" [1660], "The Pores of Bodies" [1663], "On Cartesian Physics"

[1664], “On Attraction” [1665], “On Custom” [1666], “On Nature” [1666], “On Judgment and Memory” [1667], “On Experiment” [1668], “On Physical Hypotheses” [1669], “On the Shapes of Bodies” [1671], and “Secrets of the Sciences” [1673]; the article on the Danish language has attracted some interest from modern Danish scholars. *De aere Hafniensi dissertatio* (Frankfurt, 1679) is a pamphlet on climatology that alludes to medieval Iceland. There may well be other tracts by Bartholin.

II. Secondary Literature. Works dealing with Bartholin include Axel Garboe, “Nicolaus Steno and Erasmus Bartholinus,” in *Danmarks geologiske undersøgelse*, 4th ser., **3** no. 9 (1954), 38–48; V. Maar, *Den første anvendelse af kinabark i Danmark* (Leiden, 1925); Kirstine Meyer, *Erasmus Bartholin. Et Tidsbillede* (Copenhagen, 1933); and Henry Oldenburg’s précis of the *Experimenta crystalli Islandici, in Philosophical Transactions of the Royal Soceity*, **6,** no. 67 (16 Jan. 1671), 2039–2048.

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