

# Auzout, Adrien | Encyclopedia.com

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(b. Rouen, France, 28 January 1622; d. Rome, Italy, 23 May 1691)

*astronomy, physics, mathematics.*

Auzout approached science with instruments rather than with mathematics. In the fall of 1647 he designed an ingenious experiment—creating one vacuum inside another—in order to prove that the weight of a column of air pressing on a barometer causes the mercury to rise inside. Auzout did not neglect mathematics, however; he criticized the treatise of François Xavier Anyscom on the quadrature of the circle and prepared a treatise of reasons and proportions. By 1660 his career centered on astronomical instruments. He made a significant contribution to the final development of the micrometer and to the replacement of open sights by telescopic sights.

Not until after [Christiaan Huygens](#) discovered that there exists a special point (the focus) inside the Keplerian telescope, which has only convex lenses, could there be a breakthrough leading to the micrometer and to radically superior instruments. (Well before Huygens, [William Gascoigne](#), after discovering the focal point, invented the micrometer and telescopic sights, but his inventions remained unknown to Continental astronomers until 1667.) Since an object can be superimposed on the image without distortion at the focus, precise measurements of the size of the image can be made. To do this, Huygens fashioned a crude micrometer. Cornelio Malvasia's lattice of fine wires was for Auzout, and probably [Jean Picard](#), who worked with him, the jumping-off point for the perfection of the micrometer. They were dissatisfied with the accuracy of the lattice because images never covered exactly an integral number of squares so they modified it. Two parallel hairs were separated by a distance variable according to the size of the image: one hair was fixed to a mobile chassis that was displaced at first by hand and later by a precision screw. By the summer of 1666 Auzout and Picard were making systematic observations with fully developed micrometers.

Soon after Huygens' discovery, Eustachio Divini and [Robert Hooke](#) replaced open sights with telescopic sights, and during the period 1667–1671 Auzout, Picard, and Gilles Personne de Roberval developed the systematic use of telescopic sights. An incomplete concept of focus caused the delay between discovery and systematic use, for Auzout, reasoning by analogy with open sights, suggested at the end of 1667 that each hair in the crosshairs be placed in a separate plane so that a line of sight might be assured. Unfortunately, after Auzout withdrew from the Académie des Sciences in 1668, he drifted into obscurity.

## BIBLIOGRAPHY

I. Original Works. A complete bibliography of Auzout's work is in R. M. McKeon (see below), pp. 314–324; the claims to priority in development of the micrometer of Auzout, Picard, and Pierre Petit are discussed on pp. 63–68. Most of Auzout's published works are reprinted in the *Mémoires de l'Académie Royale des Sciences, depuis 1666 jusqu'à 1699* (Paris, 1729), **6**, 537–540; **7**, Part 1, 1–130; **10** 451–462. The major part of his correspondence is published in E. Caillemer, *Lettres de divers savants à l'Abbé Claude Nicaise* (Lyons, 1885), pp. 201–226; [Christiaan Huygens](#), *Oeuvres*, 22 vols. (La Haye, 1888–1950), IV, 481–482; V, *Passim*; VII, 372–373 (two letters are incorrectly attributed to Auzout in VI, 142–143, 580); H. Oldenberg, *Correspondence*, A. Rupert hall and Marie Boas, eds. and trans. (Madison, Wis., 1965- ); S. J. Rigaud and S. P. Rigaud, *Correspondence of Scientific Men of the Seventeenth Century* (Oxford, 1841), I, 206–210. The manuscript copies of Auzout's letters to Abbé Charles that were in the possession of the Ginori-Venturi family of Florence—called Épreuves in McKeon, p. 228, n.1—were listed in the spring 1966 catalog of Alain Brieux, Paris, and were sold. (The editors of Huygens' *Oeuvres* identify Abbé Charles as Charles de Bryas [IV, 72, n.4], but Abbé Charles's horoscope, which relates that he was born at Avignon in March 1604 and formerly was employed by Cardinal Mazarin [Bibliothèque Nationale, MSS fonds français, 13028, fol. 323], rules out their identification.)

II. Secondary Literature. Writings on Auzout or his work are Harcourt Brown, *Scientific Organizations in Seventeenth Century France* (1620–1680) (Baltimore, 1934); C. Irson, *Nouvelle méthode pour apprendre facilement les principes et la pureté de la langue française* (Paris, 1660), pp. 317–318; and Robert M. McKeon, “Établissement de l'astronomie de précision et oeuvre d'Adrien Auzout,” unpublished dissertation (University of Paris, 1965); “L'érécit d' Auzout au sujet des expériences sur le vide,” in *Acts of XI International Congress of the History of Science* (Warsaw, 1965), Sec. III; and “Auzout,” in *Encyclopaedia universalis*, in preparation.

Robert M. Mckeon

