Biographical Encyclopedia of Astronomers

Gassendi, Pierre

Born Champtercier, (Alpes-de-Haute-Provence), France, 22 January 1592

Died Paris, France, 24 October 1655

Among the most celebrated philosophers of his century, Pierre Gassendi was one of three surviving children born to Antoine Gassend and Françoise Fabry, a humble farm family from the south of France

Initially educated by his uncle Thomas Fabry, Gassendi later studied at Digne (1599–1606) and Aix (with Philibert Fesaye, 1609–1612) before being appointed canon and finally Principal of the Collège of Digne in 1612. After receiving his *doctorat* in theology from Avignon in 1614 (under Professor Raphaelis), Gassendi was ordained a priest and accepted the chair of philosophy at Aix, which he held from 1616 to 1623. Here Gassendi lodged with Joseph Gaultier, then the most noted astronomer in France. During this time, Gassendi also visited Paris (April 1615) where he first met Nicolas-Claude Fabri de Peiresc, his later patron Gassendi traveled extensively in his middle years, living in Provence (1625-1628) and Grenoble (1628-1634), visiting Paris and the Netherlands (1628-1630), and later dividing his time between Provence (1634-1641) and Paris (1641-1648). Gassendi's final years were spent in Provence (until 1653) and Paris, where he revised his major works, among them the *Animadversions* (later called *Syntagma*, 1658).

Gassendi is best remembered as a Mechanical Philosopher. As the traditional counterpoint to René Descartes, Gassendi was an Epicurean atomist and mitigated skeptic who opposed the corpuscularism and dogmatism of the Cartesians. Stridently anti-Aristotelian, Gassendi sought to rehabilitate the ancient atomism of Epicurus but also drew on the skeptical philosophies of Sextus Empiricus, Michel de Montaigne, and Pierre Charron. As an empiricist, Gassendi sought a "science of appearances" based on sense experience and probability, thus opposing Descartes' rationalism and innate ideas. Arguing that the inner nature of things could not be known, Gassendi insisted that appearances were beyond doubt and sufficient for establishing the New Science. Descartes retorted that this was the philosophy of a "monkey or parrot, not men."

Gassendi's principal scientific interest was astronomy. A skilled observer, Gassendi was a mainstay of the French *école provençale* and a founding member of the *école parisienne* (or Paris Circle). An early but a prudent Copernican, Gassendi was an active and able observer eager to coordinate and compare telescopic observations. Over the course of his career, he owned a number of instruments, among them five Galilean telescopes of good quality, as well as several quadrants (5-, 2-, and 1.5-ft radii). One of his first telescopes came from Galileo Galilei, though his best lenses were made by Johannes Hevel (Hev-elius) (1648, 4.5 ft.) and Eustachio Divini (1653). When visiting Aix, he also had access to Peiresc's five telescopes.

Like others of his generation, Gassendi mainly used Galilean, not Keplerian, telescopes, which did not come into widespread use until after his death.

Gassendi corresponded with astronomers all across Europe During his second trip to Paris (1628-1632) he visited the famous Cabi-net Dupuy where he made lifelong friendships with Marin Mersenne, François Luillier (a patron with whom he lived), Gabriel Naudé, Claude Mydorge, and the young astronomer, Ismaël Boulliau. During this time, he also met Hevelius, who was then visiting Paris with his mentor, the astronomer Peter Krüger. Thereafter, Gassendi actively contributed astronomical observations to the correspondence networks of Peiresc, Mersenne, Boulliau, and Hevelius, an overlapping network that included Galileo, Christian Severin (Longomontanus), Philip Lansbergen, Gottfried Wendelin, Maarten Van den Hove (Hortensius), Wilhelm Schickard, Christopher Scheiner, and dozens of other scholars, including Thomas Hobbes, Gui Patin, Willibrord Snel, and Samuel de Sorbière. Significantly, Gassendi was among the first in France to maintain a journal of astronomical observations (1618–1655), though many of his manuscripts, letters, and observations remain unpublished.

Gassendi's interest in astronomy was linked from the outset to the "optical part of astronomy." He recognized that practical astronomy was based on observation, and as a skeptical philosopher, his theoretical oncerns ran deep. If all knowledge is based on observation—and all appearances are true—then the "play of light" was serious business. These interests are evident throughout Gassendi's career, from his early years (*Parhelia sive soles*, 1630), his middle years (*De Apparente*, 1642), and in his posthumous publications (*Syntagma*, 1658). Halos, coronas, rainbows, and the "moon illusion" were crucial tests for establishing an empiricist epistemology. That meant rethinking the foundations of astronomy and optics—disciplines where light and vision converged

Gassendi's international reputation was tied to the transit of Mercury (7 November 1631), a "rare and beautiful phenomenon" with important theoretical implications. In his *Admonitio ad astronomos* (1629), Johannes Kepler had advised astronomers to observe the transit in order to confirm Mercury's elongated elliptical orbit and unequal motions. Furthermore, transit observations would be useful for establishing the dimensions of the Solar System, perhaps even the Copernican theory itself. But sky conditions throughout Europe were poor, and Gassendi was all but alone in tracing Mercury's path. Gassendi's method was based on the principle of a *camera obscura*. Projecting the image of the Sun through a telescope onto a screen, Gassendi marked times of ingress and egress, while an assistant noted the solar altitude. Some of the results were unexpected In his *Mercurius in sole visus* (Paris, 1632), Gassendi admitted that he almost mistook Mercury for a sunspot due to its unexpectedly small diameter (some 20 inches). Only three other astronomers observed the transit: Johann Cysat, J.-R. Quietan, and an anonymous Jesuit in Ingolstadt, but their observations were imprecise and of little use. Gassendi's observations showed that the tables of Severin erred by over 7°, the Prutenic by 5°, and the Rudolphine by 14 minutes.

Gassendi's interest in astronomy was never more focused than in his collaborations with Peiresc, particularly during the years 1631–1637. Among the publications that resulted from their research, largely on the "optical part of astronomy," was Gassendi's *De Apparente magnitudine* (Paris, 1642). Here Gassendi defended his atomist views in optics and vision against a cross

section of four carefully selected combatants: against the Aristotelian views of two friends, F. Liceti and G. Naudé; against the polite but vague views of Jean Chapelain; and finally, against his friend Boulliau, who defended Kepler's punctiform analysis. For his part, Gassendi proposed a "materialist" theory of light, pointedly combating the "mathematicians"—those who described light as geometrical rays rather than explaining it, as Gassendi proposed, as a physical body. Similar themes underlie Gassendi's *Solstitialis Altitudo Massiliensis* (1636).

Peiresc's death in 1637 marked a turning point in Gassendi's career. Suffering from depression, Gassendi recovered slowly, thereafter devoting several precious years to writing his friend's biography, *Vita illustris* (Paris, 1641), a classic of the genre. During this difficult interlude, Gassendi obtained another patron, L.-E. de Valois, the new Governor of Provence (1638). Among his closest friends, Valois was Gassendi's most prolific correspondent (some 350 letters). But Valois was less interested in science than Gassendi's earlier patrons; his letters were often short and offhand, and, significantly, Valois placed greater demands on Gassendi's time. Upset by the loss of Peiresc—who died having published nothing—Gassendi's sense of urgency increased with the onset of his own illness, a lung ailment (1638) that finally took his life. Unsettled, he departed for Paris (1641–1648). But conflict, both public and private, continued. Antoine Agarrat, Gassendi's longtime assistant in astronomy, soon joined forces with Jean-Baptiste Morin in their ongoing pamphlet war, and charges of heresy soon followed.

Gassendi's years in Paris (1641–1648) were nevertheless highly productive. In 1641, Mersenne asked him to supply a critique of Descartes' *Meditations*, and there, in the Fifth set of *Objections*, Gassendi fleshed out differences between Cartesianism and Gassendism. In addition, Gassendi continued to publish works on astronomy, including *Novem stellae circa Jovem visae* (Paris, 1643) and several works on motion, providing one of the first modern statements of the principle of inertia. Now famous throughout Europe, Gassendi was appointed Professor of mathematics at the Collège Royale, but he was soon forced to discontinue his lectures due to poor health In 1647, Gassendi published his *Institutio astro-nomica*, a "modern" textbook rivaled only by Kepler's *Epitome* and Descartes' *Principles*. Here, Gassendi provided an introduction to astronomy and a comparison of the Tychonic and Copernican models (Book III). Publicly, Gassendi viewed the Tychonic model as a cautious compromise. Privately, his commitment to sun-centered cosmology was discreet but unswerving.

Following Mersenne's death in 1648, Gassendi again departed Paris for the healthier climate of Provence. Distracted by controversy and suffering from pain, Gassendi wisely enlisted friends to defend his views (and orthodoxy) against Morin, thus freeing himself to focus on his writing. But as the controversy escalated, Morin predicted Gassendi would die the following year. The prophecy proved false. The following February, accompanied by Luillier and François Bernier, Gassendi climbed the highest peak of Puy-de-Dôme (1650). The exercise confirmed Pascal's barometric experiment and provided living proof against judicial astrology

Gassendi's last years were spent in Paris. Departing from Provence in April 1653, Gassendi took up residence on the second floor of the Hôtel de Montmor. After the death of his third patron, Valois, Gassendi enjoyed the support of "Montmor the Rich." Together they established the famous Académie Montmor. During this time, Gassendi published several works, among them his biography of Tycho Brahe (1654) and a treatise on the eclipse of August 1654.

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