Biographical Encyclopedia of Astronomers

Hire, Philippe de la

Born Paris, France, 1640

Died Paris, France, 21 April 1718

Philippe de la Hire was a mathematician, an observational astronomer, and a key figure in the Académie royale des sciences. La Hire was the eldest child of Laurent de la Hire, *peintre ordinaire du roi* and professor at the Académie royale de peinture, and Marguerite Coquin. Laurent was a well-known artist whose patrons included Cardinal Richelieu. Laurent and his wife were financially well-off—they owned several properties in Paris, and their residence was frequented by leading figures from the visual arts and the mathematical sciences. The geometer Gérard Desargues was one of Laurent's closest friends. Laurent intended Philippe to also be a painter and, to that end, educated him personally Philippe's study of geometry was assisted by Desargues, who probably introduced him to projective geometry. Laurent, who admired the Venetian masters, urged Philippe to go to Venice, which he did in 1660, remaining there for four years. He also worked on classical geometry, especially the Conic sections of Apollonius.

After his return, this young man of independent means devoted himself to projective geometry, drawing, and painting. He collaborated with the engraver and geometer Abraham Brosse, who had also worked with Desargues. In 1672, La Hire published his *Observations sur les points d'attouchement de trois lignes droites qui touchent la section d'un cone....* This was followed in 1673 by his *Nouvelle méthode en géométrie pour les sections des superficies coniques et cylindriques*. The *Nouvelle méthode* displays the influence of Desargues, yet La Hire denied that he knew of Desargues's work on conics before 1672, only encountering it later. This is an early example of La Hire's propensity to claim that his publications owed little to others.

By the time he published the *Nouvelle méthode*, La Hire's personal circumstances had changed. In 1670 he married Cathérine le Sage, who came from a Parisian bourgeois family. They had four children by the time she died in 1681. Later that year he remarried, his second wife being Catherine Nonnet, the daughter of a notary; four more children were born of this marriage. In 1679 La Hire published his *Nouveaux élémens des sections coniques...*, and in 1685 his most comprehensive treatise on conic sections, *Sectiones conicae in novem libros distributatae*

La Hire had attracted the attention of the Académie des sciences and in 1678 was brought in as an astronomer, despite lacking astronomical experience. It is unclear to whom it was suggested to J. B. Colbert, protector of the academy, that he be appointed. Jean Picard may have been involved, for La Hire's first task was to assist him with surveys for the new atlas of France, which the academy was preparing. In 1679, La Hire accompanied Picard to Brittany and in 1680 to Guyenne. They then split up, La Hire concentrating on Calais and Dunkirk (1681) and Provence (1682). In the latter year, Picard died. Philippe inherited his scientific instruments and papers. La Hire and his family also moved into the Paris Observatory, which became their permanent residence

Astronomy never monopolized La Hire's attention. In 1683, Jean Cassini began to extend the meridian line that Picard had begun, and he placed La Hire in charge of the project to the north of Paris. From 1684 to 1685, La Hire worked on the scheme to provide a water supply for Versailles. He continued his studies in geometry and developed interests in optometry, mechanics, and meteorology. La Hire held two teaching posts: In 1682, he was made professor of mathematics at the Collège Royal, and in 1687, he became professor at the Académie d'Architecture. He accepted editorial duties, seeing through the press works of Picard and Edme Mariotte. La Hire was fascinated by scientific instruments and conducted experiments on clocks, thermometers, and barometers

La Hire acquired a mastery of the instruments at the observatory. A new quadrant in the plane of the meridian was installed in 1683, and he developed his observational skills. He had received instruction from Picard, but in Cassini, who also resided at the observatory, he had another first-class guide.

La Hire acquired a good grounding in astronomical theory, but concluded that it rested on unsure foundations: The tables with which astronomers worked, including the Rudolfine Tables of Johannes Kepler, contained so many inaccuracies that even the most sophisticated theory was rendered unsound. The principal challenge facing astronomers was, in La Hire's opinion, to improve the quality of observation. This required progress on two fronts: superior observational instruments and more accurate clocks, hence his own experiments with clocks and his design, for example, of new types of reticules for observing eclipses

La Hire concentrated on observing planetary and stellar motions, eclipses of the Sun and Moon, sunspots, planetary conjunctions, and the passage of comets. The more he observed, the more he became convinced that irregularities in the movement of celestial bodies were so frequent that no theory could do more than approximate physical reality. He published two main sets of astronomical tables: *Tabularum astronomicarum* (1687) and the more comprehensive *Tabulae astronomicae Ludovici Magni* (1702; reprinted 1727, French translation 1735). The latter appeared just as the War of the Spanish Succession was beginning, and the reference to Louis XIV implied that, just as La Hire's tables surpassed those of Kepler, so did the King of France outshine the Holy Roman Emperor

Responses to the *Tabularum astronomicarum* were mixed. John Flamsteed, for one, was disappointed that it referred to only 63 stars and contained errors in the declination of some stars. However, the *Tabulae astronomicae* proved more controversial. It contained a preface in which La Hire justified the conduct of observations as the chief duty of the astronomer. He referred to improvements to instruments that he personally had made, and later in the book included passages instructing the reader in observational techniques. Bernard de Fontenelle, secretary of the academy, included a notice of the *Tabulae astronomicae* in the *Histoire et Mémoires de l'Académie Royale des Sciences* for 1702

However, behind this apparently successful publication lay a more discordant reality. Among La Hire's papers are two statements by Cassini and his assistant Giovanni Maraldi in which they level certain charges against him. First, he did not submit his manuscript to the academy for approval (an obligation all the more necessary since La Hire associated the observatory

with his observations); perhaps he was afraid that, had he done so, substantial corrections might have been proposed. Second, although Cassini and Maraldi worked with him at the observatory, he had neither informed them of his intention to publish the tables, nor consulted them about the contents. Third, he greatly exaggerated his role in refining the instruments at the observatory, while understating the contributions of his colleagues. Fourth, his text implied that all the observations in the *Tabulae astronomicae* were his own, whereas many were by others. The formal records of the academy are silent on this dispute, but relations between La Hire and Cassini thereafter were strained

This was not the only quarrel involving La Hire. In 1694, his son Gabriel-Philippe had joined the academy. Gabriel-Philippe's first individual publication was the *Ephémérides* for 1701, in which he reproached a fellow academician, Jean le Fèbvre, for making a serious mistake in an observation made on 15 March 1699. Gabriel-Philippe did not name Le Fèbvre, but everyone knew to whom he referred. Le Fèbvre edited the journal *Connaissance des Temps*, and in the 1701 edition, he again accused Gabriel-Philippe and his father. Neither was named, but their identity was unmistakable with lies, plagiarism, and the falsification of observational data. The affair blew up in the academia. Le Fèbvre was required to apologize publicly and to reissue the *Connaissance* with the offending passage removed. He was spared a public apology, but ceased attending the academy, from which he was expelled in 1702. He also lost the editorship of the *Connaissance des Temps*.

After the controversies of 1701 and 1702, La Hire concentrated on his observations and other scientific activities, and continued publishing accounts of eclipses, sunspots, and other celestial phenomena. At the time of his death, he was a senior member of the academy and had seen his younger son, Jean-Nicolas, also become a member (1710). La Hire's career illustrates the tensions and controversies that could accompany the practice of astronomy in the Académie des sciences and exemplifies the multifarious pursuits in which many scientists engaged during this period.

David J. Sturdy

Selected References

Fontenelle, B. le Bovier de (1766). *Eloges des Académiciens de l'Académie Royale des Sciences morts depuis l'An 1699*. Paris

Gillispie, Charles C. (1980). *Science and Polity in France at the End of the Old Regime*. Princeton, New Jersey: Princeton University Press.

—— (2004). *Science and Polity in France: The Revolutions and Napoleonic Years*. Princeton: Princeton University Press.

Hahn, Roger (1971). *The Anatomy of a Scientific Institution: The Paris Academy of Sciences, 1666–1803*. Berkeley: University of California Press.

Sturdy, David J. (1995). *Science and Social Status: The Members of the Académie des Sciences, 1666–1750*. Woodbridge, England: Boydell Press.

Taton, René (1953). "La première oeuvre géométrique de Philippe de la Hire." *Revue d'histoire des sciences* 6: 93–111

—— (1973). "La Hire, Philippe de." In *Dictionary of Scientific Biography*, edited by Charles Coulston Gillispie. Vol. 7, pp. 576-579. New York: Charles Scribner's Sons.

Wolf, C. (1902). *Histoire de l'Observatoire de Paris de sa fondation à 1793*. Paris