Biographical Encyclopedia of Astronomers

Picard, Jean

Born La Flèche, (Sarthe), France, 21 July 1620

Died Paris, France, 12 October 1682

Jean Picard made notable contributions to early precision astronomy, geodesy, cartography, and hydraulics. Picard, the son of a bookseller, attended lectures at the Jesuit College of La Flèche, where René Descartes had been a student. He studied Greek and Latin literature and theology, and was initiated into astronomy during a course on Aristotelian philosophy. Picard's earliest known astronomical work occurred on 21 August 1645, when he assisted Pierre Gassendi in the observation of a solar eclipse. He also attended Gassendi's lectures on astronomy at the Collège de France in Paris. Like his mentor, Picard became an ordained priest (1650) and then traveled throughout Europe, learning Italian and German. He held several ecclesiastical positions, as abbot and prior at Rillé and Brion, and was also a schoolmaster. By and large, his astronomical studies were conducted privately, although Picard became an informal member of the Académie de Montmor

Together with Adrien Auzout and Pierre Petit, Picard devised a movable-wire (filar) micrometer and used it to measure the angular diameters of the Sun, Moon, and planets. In 1666, he was named a member of the Académie royale des sciences, an appointment that brought Picard's astronomical and geodetic skills to the fore. Thereafter, he applied both telescopic sights and crosshairs to other scientific instruments used for angular measurements, chiefly quadrants and sectors, and proposed that meridian observations be conducted by the method of corresponding heights. His assistant, Philippe de la Hire, was the first to implement Picard's suggestion of establishing a mural quadrant in the meridian plane (1683).

Armed with these newer techniques, Picard undertook his principal investigation, namely the measurement of an arc of the meridian. Supported by the Académie des sciences, this operation sought to determine a more precise value for the radius of the Earth. Picard employed the method of skeletal triangulation along the meridian between Paris and Amiens. His results, published as *La Mesure de la Terre* (1671), attained a precision some 30 to 40 times greater than previously achieved. Picard's meridian line eventually led to the first accurate trigonometric survey of France. He subsequently applied these methods to the creation of a precision map of the Paris area (*Carte des Environs de Paris*, 1678), which superseded all previous cartographic ventures.

In 1671, Picard traveled to Tycho Brahe's former observatory on the island of Hven to accurately determine its location, so that Brahe's observations could be directly compared with those at Paris. Picard (at Hven) and Jean Cassini (at Paris) used observations of the eclipses of Jupiter's satellites to determine the longitude difference between the two observatories. It was the first attempt to employ this method simultaneously, made possible by the ephemerides of Jupiter's satellites prepared by Cassini. During this project, Picard observed an annual

displacement of the pole star (Polaris), which remained unexplained until 1728 by James Bradley as being due to the combined effects of nutation and the aberration of starlight.

Picard brought back to Paris his Danish assistant, Olaus Römer, and a copy of Brahe's registers of observations. In 1673, he moved into the newly constructed Observatoire de Paris, where Cassini was installed. Picard participated in several expeditions to determine precise coordinates of various cities and harbors for the purpose of creating a new map of France. This map, drawn and published by de la Hire (1693), afforded corrections as great as 150 km in longitude and 50 km in latitude over previous cartographic methods

Picard also played a role in hydraulics, helping to solve the problem of supplying water to the fountains at Versailles. He oversaw the survey when the Grand Canal was dug in order to create artificial ponds or tanks needed to supply the fountains. Out of this survey arose Picard's correction of the apparent level, due to the curvature of the Earth. His posthumous treatise on the subject, *Traité du Nivellement* (1684), became a standard reference for more than a century.

In 1982, an international conference was held in Paris to commemorate the third centenary of Picard's death and to highlight his role in the institutionalization of science in France during the 17th century.

Raymonde Barthalot

Selected References

Armitage, Angus (1954). "Jean Picard and His Circle." *Endeavour* 13: 17-21

Picard, Jean (1671). La Mesure de la Terre. Paris: Imprimérie Royale.

—— (1680). *Voyage d'Uranibourg ou observations astronomiques faites en Dannemarck*. Paris: Imprimérie royale.

—— (1684). *Traité du Nivellement, avec une Relation de quelques Nivellements faits par ordre du Roy*. Paris: Etienne Michallet.

—— (1741). "Journal autographe des observations, 1666-1682." In *Histoire Céleste, ou Recueil de toutes les observations astronomiques faites par ordre du Roy*, edited by P. C. Le Monnier, pp. 1-267. Paris: Briasson

Picolet, Guy (ed.) (1987*). Jean Picard et les débuts de l'astronomie de précision au XVIIe siècle: Actes du colloque du tricentenaire*. Paris: CNRS.

Taton, Juliette and René Taton (1974). "Picard, Jean." In *Dictionary of Scientific Biography*, edited by Charles Coulston Gillispie. Vol. 10, pp. 595-597. New York: Charles Scribner's Sons