Biographical Encyclopedia of Astronomers

Snel, [Snell] Willebrord

Born Leiden, (the Netherlands), circa 1580

Died Leiden, the Netherlands, 30 October 1626

Willebrord Snel is chiefly remembered for his discovery of the law of refraction that bears his name, and for his demonstration of the first accurate measurement of an arc of the meridian. Snel's father, Rudolph Snellius, was a professor of mathematics at the University of Leiden. There, Snel studied law but remained chiefly interested in science and mathematics. After 1600, he traveled extensively in Europe and at Prague met Tycho Brahe and Johannes Kepler. Snel returned to Leiden in 1604 and began to translate and restore the mathematical works of Apollonius. In 1608, he was awarded a master's degree; that same year, he married Maria de Lange. The couple had eighteen children, only three of whom survived to adulthood

After his father died in 1613, Snel assumed his position at the University of Leiden as a teacher and professor of mathematics. He then applied the method of triangulation proposed by Gemma Frisius to measure the distance between the towns of Alkmaar and Bergen op Zoom, which lay nearly on the same meridian. For his measurements, Snel used a large quadrant with a radius of 2.1 meters. He presented his results in the booklet, *Eratosthenes batavus* (1617). The method perfected by Snel to discover the Earth's true dimensions was later utilized by French astronomer Jean Picard upon a larger meridian arc. Snel, however, apparently remained a follower of the Ptolemaic (geocentric) theory of the Universe

Snel investigated the refraction of light and succeeded where others (including Kepler) had failed in deriving a general law. As it is usually expressed today, the ratio of the sine of the angle of incidence to the sine of the angle of refraction is a constant for a

given refractive medium, such as water or glass. Snel arrived at his law of refraction around 1621 but did not publish the finding before his death. Thus, priority for its publication rests with the *Dioptrique* (1637) of René Descartes, who had visited Leiden with Snel. In the words of two later optical scientists, Snel's law "swung open the door to modern applied optics" (Hecht and Zajac, 1974, p. 2).

Jordan D. Marché, II

Alternate name

Snellius

Selected References

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