

WILLEM DE SITTER
1872-1934

De Sitter was born on 6 May 1872 in Sneek (province of Friesland), the son of Lamoraal Ulbo de Sitter, a judge, and Catharine Theodore Wilhelmine Bertling. His father became presiding judge of the court in Arnhem, and that is where De Sitter attended gymnasium. At the University of Groningen he first studied mathematics and physics and then switched to astronomy under Jacobus Kapteyn. De Sitter spent two years observing and studying under David Gill at the Cape Observatory, the observatory with which Kapteyn was co-operating on the Cape Photographic Durchmusterung. De Sitter participated in the program to make precise measurements of the positions of the Galilean moons of Jupiter, using a heliometer. In 1901 he received his doctorate under Kapteyn on a dissertation on Jupiter's satellites: *Discussion of Heliometer Observations of Jupiter's Satellites*. De Sitter remained at Groningen as an assistant to Kapteyn in the astronomical laboratory, until 1909, when he was appointed to the chair of astronomy at the University of Leiden. In 1919 he became director of the Leiden Observatory. He remained in these posts until his death in 1934.

De Sitter's work was highly mathematical. With his work on Jupiter's satellites, De Sitter pursued the new methods of celestial mechanics of Poincaré and Tisserand. His earlier heliometer measurements were later supplemented by photographic measurements made at the Cape, Johannesburg, Pulkowa, Greenwich, and Leiden. De Sitter's final results on this subject were published as 'New Mathematical Theory of Jupiter's Satellites' in 1925.

During the First World War De Sitter was instrumental in making Einstein's General Relativity known to English (and American) astronomers. He corresponded with Einstein (see Einstein papers) and developed his own influential version of a relativistic universe, one in which the mass-density was zero and particles moved away. He published his results in three installments in *Monthly Notices of the Royal Astronomical Society* in 1916 and 1917. It was largely because of De Sitter's publications that Arthur Stanley Eddington organized the solar eclipse expedition of 1919 to test Einstein's theory. An important part of De Sitter's theory, the expanding universe, was verified by American astronomers in the mid-1920s. It was during this period that De Sitter developed tuberculosis and had to spend two years in sanatoria in the Netherlands and Switzerland (1919-21).

De Sitter was also interested in the fundamental constants of astronomy and he instituted a program of measurements ranging from geodetic and gravitational to astronomical. His efforts resulted in two publications, 'The Most Probable Values of Astronomical Constants', published in 1927, and 'On the System of Astronomical Constants', published posthumously under the care of D. Brouwer in 1938.

Along with other Dutch scientists, De Sitter worked hard to reintegrate scientists from Germany, Austria, and the Soviet Union into the international community. As president of the International Astronomical Union, from 1925 to 1928, and host of the IAU's meeting in Leiden, in 1928, he arranged for scientists from these countries to be invited individually to participate in the meeting. De Sitter died in Leiden on 20 November 1934.

Primary works

Poggendorff, vol. 5, 283-284; vol. 6, 2461-2462; vol. 7B, 4913-4914. A list of De Sitter's publications can also be found in the obituary by C. Hins (below). 'Einstein's Theory of Gravitation and its Astronomical Consequences', *Monthly Notices of the Royal Astronomical Society* 71 (1916) 699-728, 72 (1917) 377-382, 445-447; 'New Mathematical Theory of Jupiter's Satellites', *Annalen van de Sterrewacht te Leiden* 12, part 3 (1925) 1-83; 'Secular Acceleration and Fluctuations of the Longitude of the Moon, the Sun, Mercury, and Venus', *Bulletin of the Astronomical Institutes of the Netherlands* 4, n. 124 (1927) 21-38; 'The Most Probable Values of Some Astronomical Constants; 1st Paper: Constants Connected with the Earth', *ibid.*, 57-61; 'Jupiter's Galilean Satellites', *Monthly Notices of the Royal Astronomical Society* 91 (1931) 706-738 (George Darwin Lecture); *Kosmos, a Course of Six Lectures on the Development of Our Insight into the Structure of the Universe* (Cambridge: Harvard University Press, 1932); 'On the Relation between the Expansion and the Mean Density of the Universe', *Proceedings of the National Academy of Sciences* 18 (1932) 213 ff.; 'On the Expanding Universe, and Time-Scale', *Monthly Notices of the Royal Astronomical Society* 93 (1932/1933) 628-634; *Short history of the Observatory of the University at Leiden, 1633-1933* (Haarlem: J. Enschedé en Zonen, 1933); 'On the Motion and the Mutual Perturbations of Material Particles in an Expanding Universe', *Bulletin of the Astronomical Institutes of the Netherlands* 7 (1933)

97-104; 'On Distance, Magnitude and Related Quantities in an Expanding Universe', *ibid.*, 205-216; *The Astronomical Aspect of the Theory of Relativity* (Berkeley: University of California Press, 1933); D. Brouwer, ed., 'On the System of Astronomical Constants', *Bulletin of the Astronomical Institutes of the Netherlands* 8 (1938) 213-231.

De Sitter's unpublished papers are in the Collectie-De Sitter, Archive of the Leiden Observatory, Huygens Laboratory. His correspondence with Einstein concerning General Relativity is in *The collected papers of Albert Einstein*, ed. J. Stachel (Princeton: Princeton University Press, 1987-), vol. 8 (1998).

Secondary sources

C.H. Hins, in: *Hemel en Dampkring* 33 (1935) 3-18; H.S. Jones, in: *Monthly Notices of the Royal Astronomical Society* 95 (1935) 343-347; A.S. Eddington, in: *Nature* 134 (1934) 924 f.; J.H. Oort, in: *The Observatory* 58 (1935) 22-27; A. van Maanen, in: *Popular Astronomy* 43 (1935) 78-80; E. de Sitter-Suermondt, *Willem de Sitter. Een mensenleven* (Haarlem: Tjeenk Willink, 1948).

A. Blaauw, in: *BWN*, vol. 2, 511-513; *idem*, in: *DSB*, vol. 12, 448-450.
[A.v.H.]