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Celsius, Anders

(*b*. Uppsala, Sweden, 27 November 1701; *d*. Uppsala, 25 April 1744),

astronomy.

Celsius' father was professor of astronomy at the University of Uppsala, and his son early followed in his footsteps. He studied astronomy, mathematics, and experimental physics; and in 1725 he became secretary of the Uppsala Scientific Society. After teaching at the university for several years as professor of mathematics, in April 1730 Celsius was appointed professor of astronomy. From 1732 to 1736 he traveled extensively in other countries to broaden his knowledge. He visited astronomers and observatories in Berlin and Nuremburg; in the latter city he published a collection of observations of the aurora borealis (1733). He went on to Italy, and then to Paris; there he made the acquaintance of Maupertuis, who was preparing an expedition to measure a meridian in the north in hopes of verifying the Newtonian theory that the earth is flattened at the poles and disproving the contrary Cartesian view, Celsius joined the Maupertuis expedition, and in 1735 he went to London to secure needed instruments. The next year he followed the French expedition to Torneå, in northern Sweden (now Tornio, Finland). During 1736–1737, in his capacity as astronomer, he helped with the planned meridian measurement; and Newton's theory was confirmed. He was active in the controversy that later developed over what Maupertuis had done and fired a literary broadside, *De observationibus pro figura telluris determinanda* (1738), against Jacques Cassini.

On his subsequent return to Uppsala, Celsius breathed new life into the teaching of astronomy at the university. In 1742 he moved into the newly completed astronomical observatory, which had been under construction for several years and was the first modern installation of its kind in Sweden.

Although he died young, Celsius lived long enough to make important contributions in several fields. As an astronomer he was primarily an observer. Using a purely photometric method (filtering light through glass plates), he attempted to determine the magnitude of the stars in Aries (*De constellatione Arietis*, 1740). During the lively debate over the falling level of the Baltic, he wrote a paper on the subject based on exact experiments, "Anmärkning om vatnets fö - minskande" (1743). Today Celsius is best known in connection with a thermometer scale. Although a 100-degree scale had been in use earlier, it was Celsius's famous observations concerning the two "constant degrees" on a thermometer, "Observationer om twänne beständiga grader på en thermometer" (1742), that led to its general acceptance. As the "constant degrees," or fixed points, he chose the freezing and boiling points of water, calling the boiling point zero and the freezing point 100. The present system, with the scale reversed, introduced in 1747 at the Uppsala observatory, was long known as the "Swedish thermometer." Not until around 1800 did people start referring to it as the Celsius thermometer.

BIBLIOGRAPHY

Celsius' most important writings are *De observationibus pro figura telluris determinanda* (Uppsala, 1738): *De constellatione Arietis* (Stockholm, 1740): "Observationer om twänne beständiga grader pa en thermometer," in *Kungliga Svenska vetenskapmkademiens handlingar* (1742). 121–180; and "Anmärkning om vatnets förminskande." *ibid*. (1743), 33–50. "Observationer…" may be found in German as no. 57 in Ostwald's Klassiker der exakten Wissensehaften (Leipzig, 1894). Many of his minor writings were published as academic treatises or appeared in *Kungliga Svenska vetenskapsakademiens handlingar*. *Philosophical Transactions of the Royal Society*, and other journals. His personal papers, including letters from Maupertuis, J. N. Delisle, and Le Monnier, are at the Uppsala University library.

There is a comprehensive biography by N. V. E, Nordenmark, *Anders Celsius* (Uppsala, 1936), and a shorter version by the same author in S. Lindroth, ed., *Swedish Men of Science, 1650–1950* (Stockholm, 1952).

Sten Lindroth