Wander Johannes de Haas
1878-1960

De Haas was born in Lisse on 23 March 1878 to Albertus de Haas and Maria Efting. He attended primary school and HBS in Middelburg, where his father was head of the Rijksleerschool (a teachers' school). Starting in 1895, De Haas worked in the office of a notary, while he studied for the professional examinations (passing two of the three parts). In 1900 he passed the state examination in Greek and Latin and enrolled at the university of Leiden. From 1905 to 1911, he was an assistant in the laboratory of Kamerlingh Onnes and Kuenen, passing his doctoral examination in 1910. From 1911 to 1913, he served as assistant to H. E. J. G. du Bois at the Bosscha Laboratorium in Berlin. In 1912, he received his doctorate under Kamerlingh Onnes for a dissertation on *Metingen over de compressibiliteit van waterstof, in het bijzonder van waterstofdamp bij en beneden het kookpunt* (Measurements of the Compressibility of Hydrogen, in particular of Hydrogen vapor near and below the Boiling Point). In that year, De Haas and P. Drapier discovered an ingenious method of determining the diamagnetic susceptibility of water, a discovery that led to his appointment as 'wissenschaftlicher Mitarbeiter' at the Physikalisch Technische Reichsanstalt in Berlin, 1913-1915.

World War I forced De Haas to leave Germany. He taught physics at the HBS and Gymnasium at Deventer for a year, and in 1916 became curator at Teyler's Museum in Haarlem, where Lorentz was the chief curator. But before leaving Berlin, in 1915, De Haas had begun working with Einstein on molecular currents which give rise to permanent molecular magnets. De Haas's experiments led to the formulation of the so-called Einstein-De Haas Effect, for which he and Einstein received the Baumgärtner Prize of the Viennese Academy of Sciences in 1917. In that same year, De Haas was appointed to the chair of applied physics at the Technical College at Delft; in 1922 he accepted the chair of physics at the university of Groningen and was elected to membership of the Royal Academy of Arts and Sciences; in 1923, he became a member of the Hollandsche Maatschappij der Wetenschappen.

Upon the retirement of Heike Kamerlingh Onnes, De Haas succeeded him in 1924 as professor of physics and meteorology at the University of Leiden. With Keesom, he became co-director of the Physics Laboratory (officially named the Kamerlingh Onnes

Laboratorium in 1932) and headed the electromagnetic department. De Haas worked with a number of co-workers in cryogenic research. Under his leadership, the new method of reaching ultra-low temperatures, adiabatic demagnetization, was developed: by 1935, De Haas and his team had reached a temperature of 0.005 °K. But his research was by no means restricted to this work. Together with co-workers, De Haas made paramagnetic measurements that gave clearer insight into the structure of atoms and investigated magnetic moments of ions in crystals.

De Haas was one of the most important low-temperature physicists of the first half of the twentieth century. He took part in the Solvay Congresses of 1921 and 1930, was honored by Royal Society of London with the Rumford Medal, was an honorary member of the Société française de physique, and gave the Scott Lectures at Cambridge in 1937. In Leiden, he served as the president of the society that governed the school for instrument makers from 1926 to 1951.

In 1939, De Haas advised the Dutch government to buy quantities of uranium oxide that came on the market that year. His advice was followed, and the uranium oxide remained hidden in a laboratory in Delft during World War II. After the war, it became the foundation of a cooperative Norwegian-Dutch nuclear energy project. During World War II, De Haas had freedom to move around because of his cooperation with Cellastic, an organization that worked for the Germans. As a result, he was able to escape to England. For this cooperation, he was investigated after the war, and from June to October 1945 he was suspended as professor, after which he resumed his role and occupied the chair of experimental physics at Leiden until his retirement in 1948. He died in Bilthoven on 26 April 1960.

Primary works

Poggendorff, vol. 5, 271-272; vol. 6, 992-993; vol. 7B, 1798-1800. Many of De Haas's scientific papers were reprinted in *Communications from the Physical Laboratory of the University of Leiden* (after 1932 *Communications from the Kamerlingh Onnes Laboratory of the University of Leiden*), 1924-1942 (see *Poggendorff*, vol. 7B, 1798-1799). See also P. Drapier and De Haas, 'Magnetochemische Untersuchungen. Messung der Absoluten Suszeptibilität des Wassers', *Annalen der Physik* 42 (1913)

673-84, and 'Messungen der Absoluten Suszeptibilität von Flüssigkeiten', *Verhandlungen der Deutschen physikalischen Gesellschaft* 14 (1912) 761-763; Einstein and De Haas, 'Experimenteller Nachweis der Ampèreschen Molekularströme', *ibid.*, 17 (1915) 152-170, 203.

Secondary sources

Jaarboek der Rijksuniversiteit te Leiden (1925) 114-115; (1960) 107, 166-167; *Nederlandsch Tijdschrift voor Natuurkunde* 4 (1937) 161-171; 24 (1958) 55; *Jaarboek Koninklijke Nederlandse Akademie van Wetenschappen* (1959-1960) 300-303; *Physics Today* 13 (1960, 8 August) 54-55. See also S.A. Goudsmit, *ALSOS* (New York: Schuman, 1947), where De Haas is 'Professor X'.

J. van den Handel, in: *BWN*, vol. 1, 222-224; J.A. Prins, in: *DSB*, vol. 5, 610.

[A.v.H.]