Goodstein, (Reuben) Louis

(1912–1985)

- Michael H. Price

Goodstein, (Reuben) Louis (1912–1985), mathematician, was born on 15 December 1912 at 133 Albert Street, St Pancras, London, the younger son of Alexander Goodstein (1882–1944), cigarette manufacturer and retailer, and later stamp dealer, and his wife, Sophia, *née* Fishstein (1891–1943). Educated at Peterborough Lodge School, Hampstead, and St Paul's School (1927–31), he entered Magdalene College, Cambridge, in 1931 as an open scholar and pensioner. He gained first-class honours in parts one and two of the mathematical tripos (1932–3). Following his BA he continued as a research scholar under J. E. Littlewood, another old Pauline, and gained an MSc in 1935 for research on transfinite numbers. At Cambridge he came under the influence of the philosopher Ludwig Wittgenstein, through his lectures and also dictations to very small groups of selected students, notably including S. G. F. G. (Francis) Skinner, Wittgenstein's closest disciple and amanuensis, and a fellow old Pauline and close friend of Goodstein.

In 1935 Goodstein took up a lectureship in pure and applied mathematics at the University of Reading. Up to 1947 he taught a wide range of students and topics, particularly through the war years. Alongside his heavy teaching commitments he was supervised by Wittgenstein for his research at Birkbeck College on the foundations of mathematics. In 1946 he gained a London PhD for his thesis, 'An axiom-free equation calculus'.

On 22 September 1938 Goodstein married Luba, otherwise Louba, Goodstein (1906–1993), daughter of Samuel Etkin, wood merchant and boarding house proprietor. She had previously been married to Goodstein's uncle, Israel Goodstein, cigarette manufacturer; her relationship with Louis developed in his Cambridge years and was opposed by his orthodox Jewish parents. They subsequently had a son, Peter (*b*. 1942), and a daughter, Margaret (*b*. 1945).

In 1948 Goodstein was appointed professor of mathematics and head of department at University College, Leicester, which in 1957 received its charter as the University of Leicester. He was the first mathematical logician to take a British university chair. Up to his retirement in 1977 he was a leading figure in the advancement of mathematical logic in Britain and the developments at Leicester of both the mathematics department and the university as a whole. He presided over a fourfold increase in mathematics staffing, and was dean of the faculty of science (1954–7) and active in the chartering work. He was appointed pro-vice-chancellor (1966–9).

Goodstein influenced the work and career advancement of a number of British mathematical logicians. His particular research interests were in ordinal numbers, recursive arithmetic, and analysis, and, following Wittgenstein's influence, the philosophy of mathematics. His approach to the foundations of mathematics rejected the mainstream classical treatment and was not widely shared in Britain. He received more attention here from abroad, particularly in Russia. In addition to his many research papers eleven expository works or textbooks were published, several of which were translated into Russian, Dutch, Japanese, or Spanish.

Goodstein's exceptional mathematical ingenuity is well exemplified by a 1944 publication in number theory. Now known as 'Goodstein's theorem', the result involves 'Goodstein sequences' of numbers which very surprisingly terminate at zero after a finite number of steps. In 1982 it was eventually shown that this result cannot be proved using classical axioms for arithmetic. For his work in mathematical logic Goodstein was in 1950 awarded a London DLit and in 1975 a Cambridge ScD.

Goodstein was also a leading figure in mathematics education, particularly through his work for the Mathematical Association. In 1938 he first contributed to the association's *Mathematical Gazette*, and in 1944 he became an association member. From 1953 the association's library was gradually moved from Reading to Leicester, and Goodstein acted as honorary librarian (1955–77). Following his leadership, in 1962 the first complete catalogue of over 4500 books and 100 British and foreign periodicals was published. He also edited the *Mathematical Gazette* (1956–62). Up to and including his presidential address in 1976 his own contributions to this periodical were prolific: over seventy articles or mathematical notes and over 350 book reviews. He served on the association's council and contributed to its published reports from subject committees. In the 1970s he was also instrumental in the movement of the association's headquarters to a permanent property close to the University of Leicester, at 259 London Road. He was rewarded with the association presidency (1975–6). Many books from Goodstein's own library were donated to the association and also an unpublished archive of Skinner's notes from Wittgenstein's 1930s lectures and dictations. On Skinner's premature death in 1941 these notes were given to Goodstein by Wittgenstein.

Goodstein was a fine teacher over a range of mathematical levels and particularly gifted in mathematical exposition. Although an essentially private person, he was generous and painstaking in all his wide-ranging professional roles. In 1976 he first suffered a stroke and following a period of quiet retirement with his wife, Louba, he died suddenly of a heart attack on 28 March 1985 at his home, 39 Manor Road, Oadby, Leicester; he was survived by Louba and their two children.

Sources

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Likenesses

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