

# Wilkinson, James Hardy

(1919–1986)

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Wilkinson, James Hardy (1919–1986), mathematician, was born on 27 September 1919 in Strood, Kent, the third child in the family of two sons and three daughters of James William Wilkinson, dairyman, and his wife, Kathleen Charlotte Hardy. The family, impoverished when their dairy business failed in the 1930s, was close and happy. As a boy Wilkinson's exceptional qualities secured him a foundation scholarship to Sir Joseph Williamson's Mathematical School in Rochester before he was eleven. He won a major scholarship to Trinity College, Cambridge, which he entered just after his seventeenth birthday in 1936. He won college prizes in 1937 and 1939 for being the most distinguished student of his year in any subject, became a wrangler in part two of the mathematical tripos in 1938, and took his part three in 1939.

After the Second World War broke out in 1939 Wilkinson, together with other leading young mathematicians, was drafted into the Ministry of Supply. After working mainly on pedestrian calculations he sought a more demanding mathematical environment as soon as the war ended. In May 1946 he joined the mathematics division of the National Physical Laboratory (NPL), where E. T. Goodwin led a desk machine computing section, and where A. M. Turing was busy designing the automatic computing engine (ACE). After a brief spell of desk machine work Wilkinson devoted himself to Turing's machine. The ACE project was hampered by erratic leadership from Turing and misdirection from above. But after Turing's departure in 1948 and the establishment of a new NPL regime, Wilkinson took a leading role in the development of a modified machine, known as Pilot ACE; this proved highly successful from its inception in May 1950. In that year Wilkinson was promoted to principal scientific officer and by 1974 he had become chief scientific officer.

The results that Wilkinson obtained from programs run on the Pilot ACE and later machines spurred him to develop new analytical and numerical techniques. In succeeding years he described the fruits of his research in publications which came to form the very foundation of numerical linear algebra. He wrote more than 100 papers and was the author of *Rounding Errors in Algebraic Processes* (1963) and the monumental *The Algebraic Eigenvalue Problem* (1965). In 1960 George Forsythe of Stanford, one of the most eminent numerical analysts of his generation, wrote: 'In my opinion Wilkinson is single-handedly responsible for the creation of almost all of the current body of scientific knowledge about the computer solution of the problems of linear algebra.' This judgement was made when Wilkinson's most productive period still lay in the future. He spent his working life at NPL, but also made many visits to the USA. In particular he was an annual consultant to the Argonne National Laboratory for some twenty years, a visiting professor at Ann Arbor, Michigan (1957–73), and a professor at Stanford (1977–84). His lectures were legendary; his meticulous clarity owed much to painstaking preparation concealed by a highly individual, informal delivery.

Wilkinson obtained an ScD from Cambridge in 1962. He was elected FRS in 1969, and in the following year became the first person ever to receive both the A. M. Turing award of the Association for Computing Machinery and the J. von Neumann award of the Society for Industrial and Applied Mathematics in the same year. In the next fifteen years honours and distinctions (including honorary doctorates from Brunel, 1971, Heriot-Watt, 1973, Waterloo, 1978, and Essex, 1979) came regularly. Posthumous honours included the establishment of the J. H. Wilkinson fellowship at Argonne, and also the triennial Wilkinson prize sponsored jointly by NPL, the Numerical Algorithms Group, and Argonne.

Wilkinson was a jovial, round-faced, ruddy-complexioned man, once described as having 'all the aspects of a sailor on shore leave and ready to do the town'. He certainly had a great capacity for enjoying himself, and his ready wit enlivened any gathering. He appeared to be interested in everything and everybody; boredom was impossible in his company. Of his specific interests, perhaps the greatest outside mathematics was music, of which his knowledge was wide and profound. He was also very knowledgeable about the wines with which he entertained his friends and which he consumed with such pleasure. Very many people felt that they knew Wilkinson, though in fact few knew him well; beneath the jocularity he was a very private individual.

In 1945 Wilkinson married Heather Nora, daughter of William Henry Ware, buyer for a drapery warehouse. They had a daughter, who died in 1978, and a son. Wilkinson died at his home, 40 Atbara Road, Teddington, Middlesex, on 5 October 1986, from a heart attack.

## Sources

- L. Fox, *Memoirs FRS*, 33 (1987), 671–708
- personal knowledge (1996)
- *CGPLA Eng. & Wales* (1987)

## Likenesses

- photograph, repro. in *Memoirs FRS*, 33 (1987), 670

## Wealth at Death

£149,365: probate, 1987, *CGPLA Eng. & Wales*