Eustace Neville Fox, Fellow 1946–2008, was born on 19 December 1908 in the St Faith district of Norwich. He was educated at St Albans School, his father being a skilled joiner and workshop foreman at a building firm in the town, and was the first member of his family to go to university. Entering with an Open Scholarship, he studied Mathematics at Pembroke College, Cambridge, from 1926 to 1929, emerging as a Wrangler in Part II of the Mathematical Tripos in 1929, with a half-share of the Mayhew Prize for Applied Mathematics.

After graduating B.A. in 1929, Eustace joined the Building Research Station at Garston, often cycling to work from home in St Albans. During the 1930s he was an external student of the University of London, taking an M.Sc. in Engineering in 1938. For two years from 1934 he was at the University of Michigan, with a Harkness Fellowship supported by the Commonwealth Fund, which enabled him to visit much of North America in vacations, doing research on thin elastic plates at large deflections under the supervision of the famous elastician Stephen Timoshenko, leading to a Ph.D. in 1936.

Eustace then returned to the Building Research Station, and during the War was seconded to the Admiralty, living in Bath and Dunfermline. In Scotland he worked at Rosyth on the effects of underwater explosions on structures, and for a time he acted as Secretary of the Civil Defence Research Committee (among whose members was G.I. Taylor), concerned with the effect of blast on buildings.

In 1946 Eustace joined the academic staff of the University Engineering Department, whose then Head J.R.F. Baker had also been on
the Civil Defence Research Committee, and was elected a Fellow of Trinity as College Lecturer in Engineering. He was awarded the Sc.D. degree in 1955, and in 1960 was promoted to Reader in Engineering. In 1976 Eustace retired from the Engineering Department, but continued as a Fellow of Trinity under Title E.

In research, Eustace Fox had immense mathematical power, and great range over practical problems in structural and mechanical engineering. He had acute power of concentration – much remarked upon by his family – and rather than study several problems in parallel he would immerse himself entirely in one problem and pursue it to a comprehensive solution and publication before taking up another topic. His early work at the Building Research Station was on such matters as stresses in piles driven into the ground, and some practical applications of heat conduction theory. This interest in dynamics and stresses, coupled with the plate theory under Timoshenko, led on to his wartime studies of blast effects on structures, with publications in 1947 on underwater explosion phenomena and in 1947 and 1952 on diffraction of sound waves round obstacles. Soon after moving to Cambridge he published papers on soil mechanics and ground engineering – consolidation of soil, seepage, and elastic settlement. In Baker's Engineering Department he became interested in plastic design of structures, and carried out research on the interaction between plastic flow and various forms of buckling in columns in steel structures.

By no means all his research work was theoretical. In the 1950s he devised and carried out ingenious experiments, using the plastic flow of mild steel wires, to apply a sudden known pulse of force to a concrete beam, thus being able to study the effect of high rates of loading – a matter of great importance in explosions.

Many research students in the Engineering Department were sent to Eustace Fox for advice, on mathematics or on clarifying their thinking, particularly if their research seemed not to be going well. This sometimes led Eustace to tackle new problems, for example (just before he retired), the dynamics of overhead wires supplying high-speed electric trains. In the late 1960s, arising from discussion at a Ph.D. oral examination, Eustace determined to find the exact solution – previously thought too difficult if not impossible – for a central problem in the theory of plastic plates in bending. He pursued the solution with great ingenuity and care, programming computation of both the statical and kinematical bounds on the result until they agreed to six significant figures, eventually publishing in 1974 a definitive paper that few others could even have contemplated.

His lectures in the Engineering Department were mainly on mathematics – very comprehensive and rigorous if rather dry – and on structural dynamics, replete with illustration from his wartime experience. In Trinity he was a most conscientious Director of Studies, part of the
Binnie-Fox-Oatley engineering triumvirate of the post-war years, shepherding for example Rajiv Gandhi, the future Prime Minister of India, who to Eustace’s surprise spent three years in the College without passing an examination.

On 25 March 1939 Eustace married Joan Mary Mole, whom he had met at the Building Research Station. They were a devoted couple, scarcely parted in their sixty-three years of marriage; he found her loss in 2002 hard to take. Their first son Geoffrey, born in 1944, was himself at Trinity reading Mathematics from 1961 to 1967, graduating B.A. in 1964 with a Distinction in Part III Mathematics and the Mayhew Prize (just like his father!). Their second son John, born in 1948, also came to Trinity, reading Engineering from 1966 to 1969.

Eustace enjoyed any form of problem solving, both at work and for recreation. He completed the *Times* crossword most days, and liked puzzles and quizzes. He gained a Blue for Chess while an undergraduate. Somewhat related was his huge enjoyment of competitive sport — latterly as a spectator but in earlier days as a prodigious participator. As a young man he played tennis (his real favourite), table tennis (at which he once met Fred Perry), badminton, hockey, football, fives, and rugby (for his school’s old boys). At Cambridge he tried rowing, and he swam regularly. He kept diaries including details of his sporting results, and made a long film record of his own and his family’s life.

In Trinity Eustace was for many years the most skilled exponent of the College’s unique game of bowls, played on the Bowling Green between the Master’s Lodge and St John’s, using special woods that follow a curved path because of their truncated-cone shape. Most afternoons in the summer months Eustace would be on the Green after lunch. He had made for him a set of fairly-curly woods initalled ENF, still kept in the box beside King’s Hostel, but he was particularly lethal with the large almost-straight-running wood called Capstick, kept in reserve and frequently deployed to great effect to destroy the opponents’ position.

In later life, until well beyond his retirement, Eustace was a regular member of the golfing four, founded by Rutherford and consisting mainly of Fellows of the College, which played a round at the Gog Magog Golf Club near Cambridge almost every week.

He continued to enjoy practical activities, such as woodwork and construction, and gardening. Well looked after by live-in carers, Eustace was able to continue to live in the house that he had built in 1937 in Porson Road, Cambridge, on land initially leased from the College, until his death on 28 February 2008 in his hundredth year.

C.T. Morley

This memoir is based largely on material provided by John Fox.