

## FRANK FEATHERSTONE BONSALL



Frank Bonsall made an enormous impact on mathematics in North Britain, especially in research and graduate education. Quietly and self-effacingly, he influenced a generation of young mathematicians with the elegance and lucidity of his written and oral expositions, both of his own research and that of others. The quality of his caring and thorough research supervision was reflected in his many PhD students who continued in research.

His forebears came from Derbyshire and Yorkshire, but he was born at Crouch End in London, his father being an accountant who became the Secretary of an import-export firm. The family moved to Welwyn Garden City in 1923. Frank attended Fretherne House Preparatory School and Bishops Stortford College, where he excelled academically – winning most of the available prizes. He went up to Merton College Oxford in 1938, later recalling how much he enjoyed the freedom of university life during that first year at Oxford, as well as his first encounters with rigorous analysis – the area of mathematics that was to become his speciality. He completed two years of study at Oxford before the war intervened. He served from 1940 to 1946 with the Royal Engineers, ending up with the rank of Major and spending his last two years of war service in India, testing equipment for jungle conditions. Returning to Oxford, he completed his BA in Mathematics in 1947 and, that summer, married Gillian (Jill) Patrick, a fellow Honours graduate in mathematics from Sommerville College, Oxford. Jill was to become a very successful secondary school teacher of mathematics both in Newcastle upon Tyne and in Edinburgh.

Frank was offered the chance to stay on at Oxford as a graduate student, but decided instead to accept a one-year temporary lectureship at the University of Edinburgh. During that year, a seminar visit by Professor W.W. Rogosinski led to an appointment at King's College, Newcastle (then part of the

University of Durham), first as a Lecturer, then Reader and finally Professor. During his years in Newcastle, he became a leading figure in functional analysis and attracted a growing number of research students, amongst whom he was affectionately known as FFB. In Session 1962–63, he was supervising no less than nine PhD students, seeing each student for one hour every week. He returned to Edinburgh in 1965 to the newly-created Colin McLaurin Chair of Mathematics, with the flow of research students continuing unabated. Not long after returning to Edinburgh, he was to play a key role in founding the North British Functional Analysis Seminar, one of the first inter-university seminars in mathematics and a model for many others.

He regarded his main research work as having begun while he and Jill were spending an academic year at Oklahoma State University. The year was 1950, at which time Senator Joseph McCarthy was beginning his witch hunts against those whom he regarded as having left-wing or liberal sympathies. University staff, as state employees, were required to sign documents avowing loyalty to the United States. Frank refused to sign on principle; his salary was duly cut off and the Bonsalls had to live on savings for the remainder of their stay. Frank spent four months at the Tata Institute of Fundamental Research in Bombay in 1961, and a year as Visiting Professor at Yale University (1966-67).

Frank's research interests were wide ranging. The scope of his work may be seen in the six main themes where he saw his research lying: (i) Banach algebra theory; (ii) operators mapping a cone into itself; (iii) semi-algebras of continuous functions; (iv) the numerical ranges of operators; (v) Hankel operators on Hilbert space; and (vi) atomic decompositions and sums of Poisson kernels.

He authored 67 research papers, collaborating with no fewer than sixteen different mathematicians. He co-authored three research monographs and a chapter of one other. It is difficult to convey the technical details of his research work to a non-mathematical audience. What can be said, though, is that his work is marked by its aesthetic simplicity. This can be illustrated with one example:

In the early 1960s, the graduate analysis seminar in Newcastle was struggling through a long complicated proof of a theorem of Choquet about the extreme points of compact convex sets in general spaces. Frank reduced the whole proof to one simple application of the Hahn–Banach Theorem (“With what difficulty is that simplicity attained”). When he expounded the

proof at the British Mathematical Colloquium, the lecture hall was filled to overflowing, and even included many statisticians.

In common with many scholars who served in World War II, Frank had by-passed the PhD degree, but he was awarded a DSc from Oxford in 1964; jokingly he remarked that he had waited until his offprints achieved an agreed weight on the kitchen scales. Throughout his career he maintained extensive correspondence with mathematicians around the world, and gave service to the leading mathematical societies in Britain. Frank's honours included the Senior Berwick Prize of the London Mathematical Society in 1966, FRSE in 1966, FRS in 1970 and an honorary doctorate from York in 1990.

He never rushed into print, and it is a pleasure to re-read some of his carefully crafted research papers. His own mathematical *Apologia* was expressed in an intriguing essay, *A down-to-earth view of mathematics*, written in 1982 for the *American Mathematical Monthly* (the most widely circulated mathematical journal). One of his own most challenging standards was to refuse to quote a theorem in any of his own work unless he had completely convinced himself of its validity. He saw this as necessary to maintain the integrity of mathematics.

He also had a down-to-earth view of life. He and Jill were enthusiastic hill walkers and, true to character, he assisted a colleague at Edinburgh to climb many of the more inaccessible Munros and himself achieved the full set. His two articles on the definition of a Munro for the *Scottish Mountaineering Club Journal* influenced subsequent reformulation of the list of Munros.

Following retirement in 1984, he and Jill moved to Harrogate, where Frank remained active in research, travelling weekly to a small seminar at the University of York. In his acceptance speech for the Honorary Doctorate which was awarded to him by York, he spoke about the dangers of over-dependence on computer models in science.

Frank loved gardening. The fruits of the large garden in Edinburgh were widely shared, whilst the garden in Harrogate was a veritable wonder to behold, consisting of three different gardens: flowering trees and shrubs; rose gardens and herbaceous borders; and (his passion) vegetables and fruit bushes. There were also exotic flowers in the sun parlour and on the patio. He probably grew some of the best fruit and

vegetables obtainable in Harrogate. He also recorded extensive weather data for Harrogate. He and Jill were also enthusiastic solvers of the Ximenes crossword puzzle in the *Observer*, and their names were listed as winners on more than one occasion.

Frank Bonsall was the epitome of *a scholar and a gentleman* and will be remembered by former students and colleagues with respect and affection in equal measure. He is survived by his wife Jill, their happy marriage extending over 64 years, and also by his older brother Arthur.

**John Duncan**  
**Alastair Gillespie**

***Frank Featherstone Bonsall BA, DSc(Oxon), DUniv(York). Born 31 March 1920, elected FRSE 7 March 1966, elected FRS 1970, Died 22 February 2011.***