



Raymond Flannery – the innovative theorist

The internationally recognised academic, Raymond Flannery, has spent almost all of his working life in the United States, though his heart is never far from the land of his birth and his Alma Mater. Raymond currently funds a prize which bears his name in the School of Mathematics and Physics at Queen's ensuring that excellence in applied maths and theoretical physics is acknowledged and promoted.

"When I came to Queen's in 1958, I took 2nd year pure and applied mathematics and physics – all in my first year. In that class, I met several gifted students who had all performed superbly in their high school A-levels, so they too skipped first year.

I was exposed to the brilliant lecturing style of Professor Karl G Emeleus of the Physics Department who led me through quantum physics from a very physical viewpoint. I was then fortunate to go to the Department of Applied Maths where (Sir) David Bates provided the mathematics of all the nice quantum physics I'd learned in Physics."

(Martin) Raymond Flannery was born on 8th January 1941 in Claudy, Co Londonderry, the son of James and Bridget (née Lohan) Flannery of Tubbercurry and Roscommon respectively. His parents were schoolteachers at a two teacher school at Athnahoney, near Claudy. They had seven children and moved to Derry in 1945 where Raymond attended St Columb's College before coming up to Queen's in the late 1950s.

"I got off to a good start at Queen's with top-class students and professors of significance who were performing important work. I was also very fortunate to spend all of my three year undergraduate career housed in Queen's Elms (now the site of the Students' Union), a magnificent building just across from the main entrance."

Raymond earned the first of his three degrees from Queen's in 1961 when he graduated with a BSc in Mathematics (1st Class). A PhD in Theoretical Physics came three years later in 1964 followed by short spells on the faculty of Queen's and of Harvard in the USA. But it was at the Georgia Institute of Technology (Georgia Tech) that Flannery was to make his mark over the next 40 years first as Assistant Professor (1967-68), then Associate Professor (1971-74), Full Professor (1974-93) and finally Regents' Professor (1993-2007).

Illustrious career

Among numerous national and international awards earned over an illustrious career, Raymond Flannery received the Distinguished Professor Award at Georgia Tech in 1995. In his remarks at the time, college President Wayne Clough referred to him as 'one of the senior statesmen of the physics field,' an 'acknowledged leader in

theoretical studies of recombination processes,' and an 'innovative theorist'.

Raymond's research focused on the theory of atomic and molecular collision processes and, in particular, on ultracold Rydberg plasmas. "I learned early on from my days at Queen's to collaborate with those who were carrying out significant work," said Raymond. "In turn, I was able to develop my own original research capability which resulted in some rather nice publications on problems which had never been fully solved before."

Throughout his career he published over 170 refereed papers and review articles in atomic and molecular physics journals and presented over 50 invited papers at national and international scientific conferences. He was a member of the Advisory Board of the Institute for Theoretical Atomic, Molecular and Optical Physics, Harvard University. He is a Fellow of the American Physical Society and the Institute of Physics, London and, in 1997, was elected an Honorary Member of the Royal Irish Academy, in recognition of his 'distinguished services in the Section of Science'. Then, 37 years after first crossing the stage at the Sir William Whitla Hall, Queen's presented Raymond Flannery with his third degree, that of Doctor of Science, DSc (honoris causa) in 1998 for 'his distinction as a scientist.'

"Raymond Flannery was part of the 'golden era' in theoretical atomic and molecular physics at Queen's in the 1960s."

Among Raymond's most cherished awards however, is that of Alumnus Illusterrimus, which he received in 2001 from St Columb's College, where he was a pupil half a century earlier. Holding a special place in his heart, this particular honour came not from a narrow field of scientific peers, but rather from educators and lay people, in recognition of the impact of Raymond's major achievements.

After 'retiring' in 2007, Raymond Flannery remained as Regents' Professor Emeritus at Georgia Tech, continuing his research and serving the College which graduates the largest number of engineers in the US and which he describes as one of the finest engineering and bio-engineering schools in the world.

The Raymond Flannery Prize

Raymond Flannery's love and respect for his Alma Mater are all too evident. "I realised back then that the Department of Applied Mathematics, under the leadership of Professors Bates and Dalgarno, was the best place in the world to study theoretical atomic and molecular physics," he said.

"Postdoctoral Fellows and faculty came from all over, particularly the USA, to study at Queen's. I learned so much from these international scientists. In fact, my office mate in 1965 when I was an Assistant Lecturer was Neal Lane who went on to become Director of the National Science Foundation and later President Clinton's science advisor. With its world-class research and faculty, the Applied Maths Department enjoyed a golden era, of which we are all proud."

It's not surprising then that Raymond should set up a prize to support students at Queen's in the subject area that he loves so much. The Raymond Flannery Prize was established in 2011 and is awarded annually to the MSci graduate in the School of Mathematics and Physics with the best overall mark. This year's winner is Emma Laughlin from Kilrea near Coleraine, who told the *Donor Newsletter*: "It is a tremendous honour to have been awarded this prize from such a widely recognised, respected and renowned physicist as Professor M Raymond Flannery.

"This award is a great way to round off four years of challenging, yet interesting and enjoyable studies in Applied Mathematics. It also reflects the encouragement and support which I have received during my Masters from a highly dedicated and inspirational group of lecturers and tutors.

'It has indeed been an immense privilege to learn from and work alongside them,' she added.

Raymond Flannery was part of the 'golden era' in theoretical atomic and molecular physics at Queen's in the 1960s. The majority of his life may well have been spent away from these shores, but through the prize his name lives on in his Alma Mater. And future generations of students – here and elsewhere – will have him to thank for inspiring them to pursue careers at the leading edge of physical science.