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## JOHN WHELAN

Fourteen years ago John Whelan began studying for his masters degree in astrophysics at the University of Sussex. It was the start of an outstanding career of original research and teaching in astronomy which was exceptional for the range of subjects he contributed to, and the personal inspiration he provided for others. His death at the age of 36 after a long battle with cancer, fought with those qualities of determination, optimism and courage he showed throughout his life, is a loss to all who knew him, to the astronomical community to which he contributed so fully, and to the subject to which he was devoted.

John Whelan was born 1945 July 30, the eldest son of Mr and Mrs James Whelan. He gained a first-class degree in mathematics at King's College, London, in 1967, before starting to study at the Astronomy Centre in Sussex.

There he completed an MSc degree with distinction, followed by his DPhil research on contact binary stars, and the structure of rotating stars. The Astronomy Centre, and indeed the University of Sussex, was then in its early years, and much depended on the successes of its first students. From the beginning John Whelan applied himself to research with infectious enthusiasm and an outgoing spirit.

His research at that time, under the supervision of John Hazlehurst, dealt with the problem of contact binaries, and the way in which energy transfer between the two stars might resolve the problem of their mass-to-light ratios. Trying to satisfy the constraints of thermal and hydrostatic equilibrium within a common envelope led him to consider the fundamental problem of stellar rotation. With John Papaloizou he developed an original method for calculating the structure of rotating stars, known amongst those who knew them then as the  $J^2$ , or John squared, method – a method used subsequently by others in studies of stellar rotation.

His thesis work was largely theoretical, motivated by major observationally based problems. It was followed by two years as an SRC/NATO fellow at the Steward Observatory where he broadened his interests to become an experienced optical observer. This period commenced the combination of observational expertise and theoretical understanding that characterized so many of his later contributions. His versatility in both was of such a standard that theoreticians regarded him as a major theoretician who knew intimately the strengths, and interpretational limitations, of observations, and observers thought of him as an experienced observer who had a deep theoretical understanding of his subject.

At Arizona he obtained his pilot's licence and flying became an abiding source of pleasure. Briefly visiting him in 1973, we flew around Kitt Peak as he pointed out the telescopes and the desert surroundings with joyful enthusiasm. What made him so brilliant a teacher was this open, confident sharing of his life with others.

He went to Cambridge in 1973 where he was a dedicated teacher of mathematics at Christ's College, while at the same time giving himself fully to the supervision and advice of graduate students, and to research and administrative duties at the Institute of Astronomy. In 1975 he took a major part in organizing the IAU Colloquium at Cambridge on the 'Structure and Evolution of Close Binary Stars' and then spent a year as Staff Astronomer at the Anglo-Australian Observatory. His research flourished with a series of papers on the optical identification of X-ray binaries, and interpretation of their spectra to obtain information on the mass transfer process, the nature of the interacting components and their relation to other classes of interacting binary. While carrying out this research, he provided confident and capable assistance to visiting astronomers. The AAT was then coming into full commission and John shared his experience of the pleasures and pitfalls of observing in several articles and a guide for visiting astronomers.

Returning to Cambridge he contributed to a programme of interpretation of the spectra of white dwarfs and high-redshift quasars, and took a major part in the discovery of the optical counterpart of Circinus X-1. A series of

spectra taken of A0620-00 led to an important paper on the changes taking place in this, probably the best observed, X-ray transient. Into this research and teaching at Cambridge were fitted tight schedules of observing trips to Chile, Arizona, Australia and numerous conferences and institute seminars all over the world.

In recent years he turned his attention to novae and cataclysmic variables, and, with others at the Institute, established a major centre of research in this area. John's own main contribution was first, with his student S. Mayo, and D. Wickramasinghe, to investigate the problem of line formation and the continuum distribution in accretion discs using models which were a considerable advance on earlier work. Appreciating the importance of ultraviolet observations of discs in cataclysmic variables, he started a programme with Jim Pringle of simultaneous observations in the optical and ultraviolet, using the *IUE* satellite and optical telescopes. This resulted in the clear identification of a predicted disc-type spectral distribution in the continuum from some of these systems – work which his students and colleagues are continuing at Cambridge. All through his illness he was most concerned with being kept informed of progress in this research, and the progress of his students.

John Whelan gave himself wholeheartedly to all his commitments and responsibilities. Everyone who met him, however briefly, was struck by his integrity, his openness, his tact, his understanding and concern for other's problems, and above all his generous nature. He was totally above all intrigue and shared his knowledge and experience with a generosity which benefited everyone who came into contact with him. He made friends everywhere, who showed their profound concern during his illness wherever one went. His tragically early death is a loss to British astronomy, not only because he had achieved so much in so short a span, but because the combination of goodness, confidence and generosity that came from the depths of his nature inspired so much in others. His manifold achievements live, as will the influence of his humanity on those who knew him.

G.T.BATH