

ALAN JAMES DUNCAN
BSc(St And), MS, PhD(Stan), CPhys, FInstP, FRSA

Professor Duncan died suddenly on July 9 1999 while on holiday with his wife in British Columbia.

Alan Duncan was born on November 4 1938, at Kingston, near North Berwick, and was educated at North Berwick Primary and Secondary Schools. There were brief interludes in South Shields and Newcastle upon Tyne which left him rather disillusioned with the English education system! He went on to study Natural Philosophy, Mathematics and Applied Mathematics at the University of St Andrews, gaining a First Class Honours degree in Natural Philosophy in 1961, when he was awarded the Class medal and the Neil Arnott prize. At St Andrews he was strongly influenced in his love of physics by J F Allen.

After graduating, Alan spent four years in industry, two as a research assistant at Tube Investments Ltd and two as a research officer at International Research and Development Co. Ltd.

From 1965 to 1970 he was a research assistant at Stanford University where he obtained his MS and PhD degrees. His studies involved investigating various aspects of plasma physics and his research supervisor was Sir Frederick Crawford.

In 1970 Alan was appointed lecturer in Physics at the University of Stirling. There he joined Hans Kleinpoppen's Atomic Physics research group. Equally at home with both experimental and theoretical physics, he greatly enhanced the international reputation of Stirling in this area. He participated in and supervised the design, construction and operation of a metastable atomic hydrogen beam apparatus which was used to observe successfully for the first time the two-photon decay of metastable atomic hydrogen. The apparatus was then used in a practical realization of the famous Einstein-Podolsky-Rosen thought experiment to test some of the fundamental predictions of quantum theory. The results obtained were novel and unique and brought wide national and international recognition, as evidenced by the numerous invitations Alan received to speak at scientific conferences. Also, in 1985, SERC chose to highlight his research in their publication *Highlights in Physics*. Just before his death, Alan was involved in the final preparation of a joint paper with Marlan O Scully (Max Planck Institute, Munich, and Texas A&M University) and Hans Kleinpoppen, summarising the results of the pioneering experiments on the coherence and correlation effects of the two-photon radiation of atomic hydrogen.

Alan was also active in many other atomic physics projects involving electron-atom collisions, jointly supervising with Hans Kleinpoppen a considerable number of successful PhD students from all over the world.

More recently, Alan had been collaborating with Wilson Sibbett of the University of St Andrews, and Miles Padgett, now of Glasgow University. This collaboration was successful in developing two novel optical instruments with important practical applications. The first was a compact Fourier-transform spectrometer with no moving parts, which can be used, for example, in the detection of atmospheric pollutants. The spectrometer has been granted a full patent and has been successfully marketed. The second instrument was a new type of optical profilometer for recording surface profiles. The profilometer system won joint first prize in the 1998 National Physical Laboratory "Metrology for world class manufacturing awards" competition. Another area in which Alan was recently involved, with Bill Wales at Stirling, was biological optics and vision.

Alan was promoted to a Readership in 1988 and finally to a personal Chair of Experimental Physics in 1998. He enjoyed the activities of the Royal Society of Edinburgh (to which he was elected in 1992) and of the Institute of Physics. He was a member of the Scottish Branch of the Institute for 18 years, including a period as chairman. For 16 years he was the main organiser of the Stirling Physics Meeting, a one-day meeting that attracts more than 200 physics teachers from all over Scotland. In May of this year, at the 25th meeting, Alan was presented with a crystal gift in recognition of his contribution.

Being in one of the UK's smallest Physics departments, Alan contributed to all aspects of the department's teaching and administration. This was recognised by his appointment as Lead Assessor for Physics in the 1993-94 teaching quality assessment in Scottish Universities.

In his youth Alan was a keen rugby player and athlete, and won a half-blue in athletics at the University of St Andrews. He was a man of very wide interests, especially of modern and ancient history, and he had a great love for Scotland. When I joined the Physics Department at Stirling in the early 1980s, the teaching staff in Physics consisted of three Irishmen, two Germans, two Welshmen, and one Scot – Alan. No wonder he had the Declaration of Arbroath prominently displayed in his office!

Alan was a gentle and modest person; with his wide interests and wry sense of humour he was excellent company. He was a devoted family man and was at his happiest in the company of his wife Irene and his son and daughter, Robert and Fiona. He will be sadly missed by them and by his many friends.

I am grateful to Emeritus Professor Hans Kleinpoppen for reading this manuscript and for his helpful comments.

HERBERT R WILSON