

Aston Medal 1990

John Herbert Beynon



John Herbert Beynon FRS received the Aston Medal at the BMSS Silver Jubilee Meeting held at University College London in September 1990. In total, John received 17 awards over four decades including: the Maurice Hassler Award (1979); Thomson medal (IMSS, 1985); Joe L. Franklin Award and the Josef Stefan Medal (Yugoslavian MS Society).

John, born in Ystalyfera near Swansea, graduated in 1943 with a 1st class (Hons) degree in Physics from University College Swansea, after which he served as a technical officer in the Ministry of Supply, until 1947, where he worked on the development of tank gun-sights. For the next 27 years John worked for ICI in Blackley, becoming a research manager, a post with huge responsibility. His early career in ICI was spent building a single-focusing mass spectrometer and applying it to organic MS. His second full publication describes "Qualitative analysis of organic compounds by mass spectrometry", and was published in Nature. John then started a collaboration with Robert Craig, Alan Ercock and John Waldron at Metropolitan Vickers (later to be Associated Electrical Industries Ltd), who were developing a high-resolution double focusing instrument with electrical detection aimed at organic chemical applications. Results of this pioneering work appeared in the first volume of *Advances in Mass Spectrometry* published in 1959. His research into accurate mass and high resolution organic MS was aided by a high quality research team in Blackley, and in particular, by his enduring friend and colleague AE (Bert) Williams.

John spent two years assembling a 640 page monograph entitled "Mass spectrometry and its Applications to Organic Chemistry", published in 1960. Such was its success that it was reprinted three times and translated into Russian. In 1969, following Fred McLafferty's move to Cornell, John was appointed a Professor of Chemistry in Purdue University, whilst retaining his post in ICI. Purdue University Chemistry Department had a high resolution CEC 110B mass spectrometer and a Hitachi RMH-2, but due to an error in its ion optics the Hitachi had limited high resolution capability. John turned this into an opportunity and developed the technique of ion kinetic energy spectrometry (IKES) to study the metastable fragmentation of ions, and later collision induced dissociation (CID) processes. IKES was improved to incorporate mass analysis before ion kinetic energy analysis and led to the technique of mass-analyzed ion kinetic energy spectrometry (MIKES), the first mature and widely adopted MS/MS technology. Graham Cooks and Richard Caprioli then arrived at Purdue and worked with John to continue this work. One of the most widely cited books in MS "Metastable Ions", published in 1973 was co-authored by Cooks, Beynon, Caprioli and Lester. His time at Purdue led to another 100 publications.

In 1971, John was elected to a Fellow of the Royal Society (FRS), and he became a Visiting Professor at the universities of Warwick (Keith Jennings' group) and Essex (Ray Gilbert). In 1974 the Royal Society offered John one of its newly created royal society research professorships and took the post to University College Swansea. In 1976 John used a prototype ultra-high resolution mass spectrometer (SM1 Varian MAT) to continue his IKES studies. Papers, authored with Robert K. Boyd, were published on the underlying laws of linked scanning (B/E, B²/E and other exotic varieties). John and Dudley Williams (Cambridge) obtained a grant for a ZAB mass spectrometer built with a "reversed- geometry" so that MIKES could be undertaken. This led to some notable work from Swansea and collaborators: on photo dissociation of ions; angle resolved mass spectrometry, hybrid sector designs (BEE geometry), transfer processes, charge stripping, other 'scan modes' such as electron capture induced dissociation of precursor ions, pyrolysis MS of DNA, & fragmentation mechanisms of small peptides (negative ion mode). In 1982 John along with colleagues Frank Harris and Gareth Brenton and his secretary, Maisie Player, organised the International Mass Spectrometry Conference (IMSC). John's publication list neared 400 publications and soon after retirement he and Gunter Heyden were responsible for launching Rapid Communications in Mass Spectrometry.

Taken from Gareth Brenton's article in BMSS Mass Matters July 2008