

J. S. Shannon—an Appreciation

It is sometimes the way of a scientist to wonder where a given idea originated. To answer this question recourse has to be had to the literature. In mass spectrometry it so happens that the answer is often Jim Shannon. To give two examples, the representation of ions as odd- or even-electron, denoted by $^{\bullet}$ and $^+$ respectively, was introduced by Jim with his background of physical organic chemistry. This led to the adoption of the fish hook by Djerassi and his co-workers. Secondly, he was the first to realise that in metal-containing compounds the distinction between even- and odd-electron ions could become blurred by the possibility of valence changes in the central metal atom. In 1956 Dr Rowland Reed together with Dr P. de Mayo of the University of Glasgow published a short note in *'Blue Bits'* on the applications of mass spectrometry to organic chemistry. This was a landmark paper and stimulated Jim's interest in mass spectrometry. His other source of inspiration was the pioneering work of Professor F. W. McLafferty on the mechanisms of ion fragmentation. Jim was employed by CSIRO at the Division of Coal Research in Sydney which wanted to develop mass spectrometry. So in 1959 he was sent to work with Dr Rowland Reed at the University of Glasgow prior to visiting Germany to discuss with the manufacturers the Atlas CH4 mass spectrometer shortly to be ordered.

His first paper on organic mass spectrometry in the *Australian Journal of Chemistry* appeared in 1962 and featured the importance of deuterium labelling in determining fragmentation mechanisms. Being associated with a Government Laboratory he did not have the advantage of the numerous research students that an academic mass spectrometrists would have. However in those days mass spectrometers were relatively rare and innovative organic mass spectrometrists even rarer. Thus the proud owner of a mass spectrometer was never lacking in friends; friends albeit who had samples in their pockets. So there was never a shortage of compounds to be investigated. In more cases than not, running samples turns up new problems which when followed up often lead to new theories. In all of this he was ably assisted by C. G. Macdonald and subsequently by M. J. Lacey. He and his entourage moved to Canberra following a reorganization of CSIRO, to the Division of Entomology where he continued his collaborative research. This coincided with the purchase by CSIRO of an MS9 high resolution instrument from AEI which greatly extended the facilities. He subsequently moved to a Chair in the University of New South Wales. This brought him new collaborators but he still retained an interest in the work in Canberra.

I first met Jim when I visited Dr Mulcahy at the Coal Research Laboratory (I was a gas kineticist at the time). Shortly after, I became a mass spectrometrists and on subsequent visits to the Antipodes I was always glad to visit Jim and to glean wisdom. When *Organic Mass Spectrometry* was founded in 1968, Jim was the obvious choice for the Australasian Editor—a role he filled until 1982. During his editorship he was always the source of wise and well thought out advice which is of inestimable value to an Editor-in-Chief.

He spent a sabbatical at University College London, a visit that the mass spectrometry group greatly enjoyed. He was a little sceptical of the value of the low-energy, low-temperature mass spectrometry that we had been developing and decided to test it out on the four isomers of menthol and their methyl ethers. This we did by recording the spectra and then giving each other the eight coded samples to try to identify. It is pleasant to be able to report that both professors identified the eight samples correctly.

Since retiring, Jim and his wife Vois divide their time between their house in Lindfield and their holiday home in Hawks Nest. His retirement was a loss to mass spectrometry.

I am glad that Jim is getting in this issue the recognition and appreciation that his work in developing organic mass spectrometry and as Australasian Editor of *Organic Mass Spectrometry* so obviously merited.

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