

## Dr. J. Peter Millington 1937–2006

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In 1965 as a very fresh and inexperienced first year doctoral student I met this urbane, widely travelled and worldly wise postdoc whose approach to any problem put to him, be it scientific, political, philosophical, or whatever, was to light up his pipe, to puff away reflectively, and, with an authoritative air, to cast his pearls of wisdom before you. His stay at the Physical Chemistry Lab in Oxford only overlapped my time there for 1 year, but that year was enough to cement a lifetime friendship and, later on, a fruitful period of collaboration. Yes, Peter Millington was a man to whom one instinctively warmed and with whom one felt comfortable and relaxed.

Peter's interest in chemistry started at an early age when he commandeered his father's garden shed in Swinton discovering the wonderful—and sometimes unexpected—world of chemical reactions. This interest matured as he moved on from school down the road to the Royal College of Advanced Technology, the precursor of today's Salford University. There he graduated with a first class honours degree which opened up a fellowship at Queen's University in Kingston, Ontario, first for an MSc and then a PhD. At Queen's Peter studied solvolysis effects of alkyl chlorosulphates with Dr Erwin Buncl. This work led rather naturally to his move as a postdoc to Oxford where, at the PCL, he investigated the kinetics of hydration of dichloroacetone in dioxan and acetonitrile with Mr R P Bell FRS. This erudite study was published in the prestigious Proc Royal Soc, although I often wondered how much the kinetics were influenced by the combination of cigar and pipe smoke and ash from Ronnie and Peter.

Although Peter was working as a physical organic chemist at the PCL, Ronnie Bell's group very much intermingled with that of a young protégé of Ronnie's who was rapidly becoming the new wunderkind of electrochemical science in the UK. So perhaps it was not too surprising that after a year of experiencing, albeit second-hand, the dynamics of John Albery, Peter took up a post in 1966 with the Electricity Council Research Centre (ECRC) at Capenhurst as a research electrochemist. Over the next thirty or so years the ECRC evolved from being totally supported by the electricity utilities through the Electricity R&D Centre to EA Technology Ltd, a small private company. The initial phase of Peter's career at Capenhurst was primarily in R&D and this led to a dozen or so patents. This was followed by a more commercial phase where he managed projects that were still scientifically oriented but

were more directed towards the exploitation of the technology. During this period Peter's talents and skills were recognised and he grew with the company through various managerial positions to become Divisional Director for Environmental and Process Technology. Within 3 years he transformed this group from being a levy-funded operation to a technology based business unit with a turnover of about £4M. Some personal recollections of the 'later years' at Capenhurst are given below in a collation produced by his good friends and colleagues—Ian Dalrymple, Dan Gilroy, Gary Sunderland, and Brian Surfleet. Other, very personal appreciations of Peter as a delightful person, a good friend and a highly valued colleague over many years are given below by Robert Clarke and Frank Walsh.

In the mid-1990s Peter took up a visiting chair in the Environmental Technology Centre in the Department of Chemical Engineering at UMIST. He did some lecturing, but his main activity was to put in place the Pollution Control Network which was designed to provide technical assistance to small businesses in Lancashire. Using his entrepreneurial skills Peter generated funding from government and EU organisations so that when he retired from the Network in 2005 the unit had a three staff completely supported by the EU.

During the time after Peter left the PCL we kept in touch on a personal basis, and when I returned to academia we began to collaborate on various electrochemical projects, first at Salford and then at Strathclyde. At his alma mater we had the pleasure of working with Ian Dalrymple while he pursued his PhD, and then in the late 1980s Peter was appointed Visiting Professor in the Chemistry Department at Strathclyde. That was a very fruitful and productive period of collaboration, with another memorable PhD student, Tom Ralph. The work Tom did in conjunction Peter, myself and Frank Walsh on the industrially important electrochemical reduction of L-cystine is still producing publications, with the last one appearing only a few months before Peter died.

Peter's professional career was prolific and remarkably creative. Everything he tackled he did so with gusto and energy. That vigorous approach to life carried over into his social life too. Until his car accident he walked and climbed with his many friends in the mountains of Wales and Scotland, as well as in the Alps and in the Atlas mountains. In the 1980s he took up marathon and fell running, and participated in a London marathon and the Three Peaks run. Even after his accident, and after six operations and other spells in hospital, he went out with the professional and business association (PROBUS) walking group with the aid of crutches!

He also had interests in local history, gardening, poetry, music, and a host of other pastimes; he was very widely read—and always enjoyed a good argument. One of his

favourite sayings was 'Come on, let's get on with it—life is not a rehearsal'. Truly he epitomised the words of Abraham Lincoln: 'In the end, it's not the years in your life that count. It's the life in your years'.

Peter was a great colleague and a good friend. I shall miss him greatly. Many others will miss him too, but none more so than his beloved wife of over 45 years, Janet, and his children Kate and Robert.

*Michael Hitchman*

## 1 A recollection of the later Capenhurst years

Following privatisation of the electricity industry in 1990, the role of Capenhurst changed with greater emphasis to a more independent commercial organisation and Peter was appointed the head of the Environmental Division. The new role embraced not only electrochemistry and chemistry for clean manufacturing, materials recycling and effluent treatment, but many other scientific areas, including high temperature ceramics, a three phase plasma unit for the destruction of chloro-organics, a novel atmospheric pressure microwave plasma, and metallurgically related projects, to list but a few.

Peter's skills of presentation and the dynamism that he brought to winning over clients came to the fore in this competitive environment and his commercial attributes were fully exploited during and after privatization. Industrial contracts in Japan, Australia and the UK, and European Union funded contracts became an important mix during the post-nationalisation period. Peter was astute at identifying possible funding contributors and the very early European projects benefited from his involvement.

Peter maintained his contact with the Universities and his collaboration with UMIST developed via a joint post graduate PhD programme. The collaborative programme enabled the PhD students to carry out their research at Capenhurst.

This was to be a platform for Peter and following his departure from Capenhurst 1996 he moved to UMIST where he and a fellow "escapee" from Capenhurst were successful in winning projects funded by the North West Development Agency and the European Regional Development Fund (ERDF) to assist SMEs in the North West of England. The projects identified problems facing SMEs, such as challenges in meeting the requirements of environmental legislation, and Peter used his broad experience to propose technological solutions and to link the SMEs with technology providers. As a component of the projects, Peter organised many seminar programmes in different parts of the North West with presentations by research and technology specialists, legislators and industrialists. This was followed by further European funding for the development of sensors based on genetically modified

yeast for the quantitative measurement of genotoxicity in pharmaceutical development and environmental impact assessment.

His scientific interests stretched across the Atlantic to California where he collaborated with Dr. Robert Clark (Electrochemical Design Associates) on the removal of toxic components from contaminated aquifers and soils. And as mentioned below, the collaboration also resulted in Peter's involvement in the development of a novel redox flow battery.

Finally with the amalgamation of UMIST and the University of Manchester, Peter decided to leave academia and he 'retired' in 2005.

Peter's capacity to deal with physical pain resulting from a near fatal motoring accident earlier in his career and his ability to remain positive in the face of the seemingly impossible continued to the end of his life.

*Ian Dalrymple, Dan Gilroy, Gary Sunderland  
and Brian Surfleet*

## 2 A personal recollection of Peter as a friend and colleague

Peter Millington was a remarkable man and a good friend to many. I had the pleasure of working with him many times, latterly as a co-inventor of a flow battery on which project he was also a highly valued consultant. Peter was the ideal type of consultant who spoke up convincingly regardless of favor to tell the truth as he saw it. He was very comfortable in his own skin, and spoke up with candour. He was an optimist who saw the best in people. He liked to travel, to walk on the hills and be about, but he was also a modest man personally with nothing to be modest about. In a word he was very likeable and well met by everyone who knew him. He was as sharp in his later years as he was as a post doc at Oxford. He was better, in fact, as he had a varied exposure to many aspects of his discipline and he gained from it.

In my first experiences with him as a colleague, we worked on the synthesis of anthraquinone from naphthalene in a joint collaboration with LB Holliday and the ECRC that created many instances where his patience and tolerance was taxed. But it was humorous also as we shared an old caravan as a mobile lab—kind of like electrochemistry on the set of 'Last of the Summer Wine'. I will not say who was Campo, but it wasn't Peter.

In much changed circumstances we traded ideas and opinions at many conferences around the electrochemists' circuit. Our wives became friends and we enjoyed each

other's company. We often we met like a group of conspirators in Florida, Portugal, Spain and the UK where discussions resumed as if we had never been interrupted.

Apart from being a very able and practical electrochemist he had gifts of personal integrity and fortitude that are lesson for us all. Just before his premature loss, he spoke frankly and without self pity about the risks he was undertaking by accepting another heart operation precipitated by the carelessness of others. He knew the risks, but he showed great courage and thoughtfulness in the way he approached it all.

I am personally very saddened by his loss. He and I had plans to work together much longer and on topics dear to both of us. His light had not dimmed and he intended to travel around and enjoy his life with Janet and his family as much as he could. His ideas will live on and his investment in his friends and family is not over.

*Robert Clark*

## 3 Peter Millington: friend and colleague

I knew Peter Millington for some 30 years, from his early days at Capenhurst through to the recent development of electrochemical reactors and battery design projects.

His versatility is shown by the nature of joint projects which included organic synthesis (direct and indirect), reactor design, environmental treatment and recycling, electrode stability and (most recently) energy conversion. Such projects ranged from laboratory rotating disc voltammetry through to the design and operation of large scale pilot and commercial plant. I was proud to co-author some ten papers (metals, organics and reactors) with Peter and shared several consultancy type assignments with him.

Peter was instrumental in my joining and chairing the Electrochemical Technology Group of the SCI. Typically, he picked up the phone and gave me ten reasons why I could not say no; he was quietly and effectively supportive of many careers in electrochemical technology.

Peter had many strengths. He was thoughtful and a good listener, an excellent technologist and an effective co-author (and research sponsor) over many years. He was honest and always direct, showing good humour in challenging situations. He will be sadly missed in electrochemical technology.

My condolences go to his family, friends and colleagues.

*Frank Walsh*