



REMEMBERING MIKE

Professor Michael J. Seaton (16.01.1923 – 29.05.2007)

When I applied for the British Council Scholarship 1967 I was to choose a department and mentor for my PhD studies in Great Britain. Browsing the leading journal in atomic physics, Proceedings of the Physical Society (now Journal of Physics B) I came across three linked papers by M. J. Seaton, dealing with electron-hydrogen scattering. (Later these papers turned out foundation of the so-called exact resonance method, one of few exactly analytically solvable methods in atomic physics). I decided to apply for the University College London and Seaton's mentorship and thus my long-term acquaintance with Mike Seaton began.

It happened that just before going to London, I attended my first international conference, held at Leningrad (now St Petersburg). Two remarkable events marked that meeting on the Atomic Physics. One was the exposition of the Fadeev equations, now famous quantum mechanical solution of the three-body problem, made by the very author. The other was presentation of the purely classical calculations of the atomic collision processes, made by Michael Gryzinski (Warsaw) and Ian Percival (Queen Mary College, London). In particular Percival presented results which corroborated earlier analytical solution of the near-threshold ionization by electrons, made by Wannier in 1953. All participants were very skeptical about the possibility of making use of the classical dynamics in atomic physics, but the classical dynamics was to stay there for long ever since.

When I arrived at UCL, Mike gave me the task to prove classically that his linear threshold law, derived purely quantum mechanically, was correct. Making use of Percival's numerical code I reproduced Wannier's result, non-linear threshold law, instead of Mike's linear one. Incidentally, about the same time American experimentalists confirmed Wannier's result and Mike himself provided me with their paper. So, the issue was more or less closed and Wannier's theory turned out to be one of the greatest achievements in atomic physics ever since.

British Council awards students for one year, but exceptionally provides scholarship for another year, if the scholar starts his PhD work, what depends on the mentor's decision. Mike turned out very generous indeed and I continued my work on the thesis.

Mike was born in Bristol, and went to Grammar School at Surrey, where he was awarded a prize in chemistry. During the war he served as Flight Lieutenant on RAF bombers, mainly over Italy. He enrolled University College London, the oldest, after Oxford and Cambridge, in England (1830), where he graduated and got his PhD. (As I was told Mike was the best student of David Bates, who himself was the best student of Sir Harry Massy, the leading figure in the field of atomic collisions, and who was still the head of the Department when I arrived to UCL). His principal interests lied in atomic physics and astrophysics. As he used to say, he was not sure himself if he was an atomic physicist disguised as astrophysicist or vice versa. Besides the exact resonance method, mentioned above, one of his main contributions to the theoretical atomic physics was the so-called Quantum Defect Theory, which he developed in dozens of papers. It concerns applying the concept of quantum defect, used in the theory of atomic structure, to the collision processes.

In astrophysics Mike was mainly interested in the study of the so-called planetary nebulae, examining their spectra. It required a very elaborate theory of the atomic structures and spectra, which was developed at UCL. Mike frequently visited leading European astronomical observatories, like that at Meudon near Paris, and some in Spain, making use of the fresh raw observational material for his calculations. Some of his students continue this research.

When I had my PhD defense at UCL in 1972, that year Departments of Physics and Astronomy merged, and Mike was elected the Fellow of the College. He retired in 1988, but held the status of Professor Emeritus. He moved from London, with his wife Joy, to a cottage in Wales, where he continued to work and publish scientific papers to the end of his life.

Mike Seaton was Fellow-Adjont of JILA at Bolder, Colorado. He was elected Fellow of the Royal Society in 1967. He was honorary member of the American Astronomical Society from 1983, and Foreign Associate of the US National Academy of Science since 1986. Between 1979 and 1981 Seaton was president of the Royal Astronomical Society. Among other awards Mike received Gold Medal (1983), Guthrie Medal and Prize (1984), and Hughes Medal of the Royal Society (1992). He served as the Senior Fellow to the Science and Engineering Research Council (1984-88).

Mike was an exceptionally genuine person, modest and restrained. It was only during my second year stay at UCL that I learned he was FRS. When I returned to Belgrade in 1969, I learned from Mike that his mother, Helen, was a volunteer medical nurse in Serbia during the Great War. Solders were fond of her and called her »little Helen«. I sent to her from Belgrade Mokranjac's »Rukoveti«, she wrote a letter of thankfulness to me and it was how a correspondence with her started. When she died Mike read a part of one of my letters at the funeral. Helen was a Quaker, devoted to charity work. She dedicated her body to medical research, as the last act of mercifulness. Mike himself asked that his body be buried in an ecologically appropriate way, as it was done indeed.

Mike was much respected by his colleagues and loved by his students. He never signed a paper unless his contribution was essential. When I submitted to him the paper from my PhD thesis, with his name first, expecting that he would eventually put his name second, he simply took a pencil and crossed his name altogether. He told me before that his order of authors was alphabetical one, except for the first paper by a young author (»in order to encourage him«. I have stuck to this rule until my retirement).

Mike was leftist for all his life. Shocked by Chamberlain's failure at Munich, he joined the Young Communist League in 1938, what he had to pay for by police persecution. (When the war started, Mike volunteered for RAF). After Soviet intervention in Hungary, 1956, Mike left the Communist party. Once he told me that he found that many parts from the original of Marx's »Capital« were omitted in later editions.

The world of physics has lost one of its most prominent researchers and educators. Serbia has been linked with Mike in many ways. It was via Mike that the theory of electron-atom collisions has been introduced here and in a somewhat more indirect way, via his collaborator Dr Gillian Peach (who used to hold the subject at the post-graduate level at UCL), the theory of line broadening. Mike visited Belgrade for a conference in 1973, stayed here for a week, but our memory on him will keep him in Serbia for long time.

Petar Grujic

28.06.2007.

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