

## Obituary: A Tribute to Roger G. Bates (1912–2007)

Arthur K. Covington

Published online: 2 April 2008  
© Springer Science+Business Media, LLC 2008

**Roger Gordon Bates**, Emeritus Professor of Chemistry at the University of Florida, since 1979, died on August 20, 2007 in Gainesville, Florida at the age of 95. Born in Cummington, Mass. in 1912, he graduated with a BS in Chemistry at University of Massachusetts in 1934 and received Masters and Ph.D. degrees from Duke University in 1937. Following graduate study, he was awarded a two-year Sterling Fellowship at Yale University. He was a member of the staff of the National Bureau of Standards (now NIST) from 1939 until 1969 when he 'retired' to become professor of chemistry at the University of Florida, Gainesville. At NBS he rose to chief of the Electrochemical Analysis Section and assistant chief of the Analytical Chemistry Division. He obtained funding to support visitors to his section for extended periods, which is how I first met him in 1966, when I spent an invigorating five months determining the ionisation constant of heavy water (using 2 L), which had first been determined 30 years earlier by my head of Department in Newcastle, W.F.K. Wynne-Jones (using 2 mL). (My colleagues in Newcastle impertinently enquired whether I would be coming back if I got a different value from Wynne-Jones'! They had no need to worry: I was in very safe hands.) Roger had a long-term collaboration and friendship with the itinerant Professor Robbie (R.A.) Robinson, who spent periods in Roger's laboratory (as well as in others world wide) after he had retired from University of Malaya. An important result of their collaboration was the convention for single-ion activities based on Robinson's theories of ion hydration, and a conventional scale of ion activities, for the standardization of ion-selective electrodes.

In 1969, he joined Herb Laitinen in the Chemistry Department, University of Florida at Gainesville setting up with him a new graduate analytical course, and his own research group, which welcomed visitors from all over the world. This continued beyond his (second) retirement in 1979, whilst still enjoying the Florida weather for his year-round relaxation with tennis (and music, for he was an extremely accomplished keyboard player).

---

A.K. Covington (✉)  
University of Newcastle upon Tyne, Newcastle upon Tyne, UK  
e-mail: a.k.covington@ncl.ac.uk



Roger was widely recognized for his pioneering work leading to the operational definition of pH and to the establishment of the NBS Standard pH scale, a scale fixed by standards, whose pH values are consistent with solution thermodynamics coupled with a conventional definition of single-ion activity (the Bates-Guggenheim Convention). This approach to the practical standardization of pH measurements was subsequently endorsed by standardisation bodies in most countries as well as by the International Union of Pure and Applied Chemistry (IUPAC). Roger Bates published nearly 300 technical articles and three books, *Electrometric pH Determinations* (1954) and *Determination of pH, Theory and Practice* (1964, 1973). He lectured widely in the USA and abroad. His studies of electrolytic solutions and the standardization of the pH scale was recognised by the award of the Hildebrand Prize for 1955 by the Washington Section of ACS, a gold medal for exceptional service to the US Department of Commerce in 1957, the ACS Award in Analytical Chemistry in 1969, and the Anachem Award in 1983. In 1995 at a meeting in Sheffield, England, he received a porcelain plate from the Analytical Division of the Royal Society of Chemistry in recognition of 'Distinguished Contributions to Solution Chemistry' (which was the occasion when the photograph above was taken).

From 1951 to 1983, Roger was active in both Analytical Chemistry and Physical Chemistry Divisions of IUPAC, where he was chairman of the Commission on Electrochemical Data and the Commission on Electroanalytical Chemistry (V5). In addition, he was a titular member of both the Commission on Electrochemistry (I3) and the Commission on Symbols, Terminology, and Units, as well as a member of the Analytical Chemistry Division Committee. He also served on the editorial advisory boards of *Chemical & Engineering News*, *Analytical Chemistry*, *Analytica Chimica Acta*, and *Bulletin des Sociétés Chimiques Belges*.

His beloved wife, Jo, to whom he was married for 62 years, died in 2003. He is survived by a daughter, May Daw (to whom I am grateful for much of the biographical information above) and a granddaughter.