

FREDERICK R.W. McCOURT

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**William Burton Pearson**  
**1921-2005**



Dr. William Burton Pearson, MA, DPhil (Oxon), Distinguished Professor Emeritus (Waterloo), Hon. DSc (RMC, Waterloo), died 23 February 2005, in Ariss, Ontario, at the age of 83 years. He was born in London, England, on 1 July 1921, and emigrated with his family to New Brunswick in 1927. His early education was obtained at MacDonald Consolidated School in Kingston, New Brunswick, and at Christ's Hospital Boarding School in Horsham, Sussex, where he was Senior Grecian in 1939-1940. He entered Oxford University in 1941, but interrupted his studies in 1942 to join the RAF as a pilot, serving with the Ferry and Transport Commands as a Flight Lieutenant. He was awarded the Distinguished Flying Cross (DFC) for bravery under fire during a supplies run to British troops in the vicinity of Arnhem in September of 1944. In 1946 he returned to his studies at Oxford, completed his MA, and went on to carry out graduate research under the guidance of Professor William Hume-Rothery, a world expert on the theory of alloys.

He completed his DPhil degree in 1952, and took up a position as a Research Officer with the Solid-State Physics Group at the National Research Council of Canada in Ottawa. Between 1952 and 1969 he was promoted from Research Officer to Principal Research Officer, and finally to Head of the Solid-State Physics Group. In 1969 he accepted the position of Professor of Chemistry and Physics at the University of Waterloo, where he served as Dean of the Faculty of Science from 1969-1977. When he retired in 1984, the University established the Pearson Medal, to recognize creative research by graduate students at the PhD level: in any given year, one PhD candidate from each academic unit in the Faculty of Science may be awarded a Pearson Medal.

Dr. Pearson, or Bill as he much preferred to be called, had a long and illustrious scientific career, as a researcher, teacher, and administrator. During the time that Bill was with the Solid-State Physics Group at the NRC, he developed into one of the leading authorities on the crystallography of metals and their alloys, publishing over 120 research papers in the areas of physical metallurgy, low-temperature physics, Fermi surfaces, the physics and chemistry of semiconductors, thermoelectricity, and crystallography. His research results have been utilized by metallurgists, chemists, physicists, mineralogists, and mechanical engineers worldwide. Bill's service on commissions and boards of the International Union of Crystallography, on committees of the Metallurgical Society of the AIME and the American Society for Metals, and on the editorial boards of solid-state and low-temperature physics and solid-state chemistry journals also provides an additional measure of the breadth and depth of his research activities.

Perhaps the accomplishment that has affected the largest number of scientific and engineering researchers was Bill's organisation, categorization, and summarization of the vast reams of crystallographic data related to metals and metal alloy systems published from roughly 1913 onwards. This monumental accomplishment started in 1952 with the 311 page monograph *Metallurgical Equilibrium Diagrams*, jointly written with Professors W.Hume-Rothery and J. R. Christian, and was followed in 1958 and 1967 by his two-volume *Handbook of Lattice Spacings and Structures of Metals and Alloys*, totalling 2500 pages.

During the course of writing Vol. 2, Bill introduced a notation for the characterization of crystal structures that consists of a lower case italic letter and an upper case italic letter, designating the Bravais crystal class and lattice type, respectively, together with the number of atoms in the unit cell for the structure. This symbol is now known as the Pearson symbol, and was recommended for adoption by the IUPAC in 2005. Bill's two-volume work evolved into what is today known

as Pearson's Handbook of Crystallographic Data for Intermetallic Phases: the first edition, published in 1985, was a joint venture between Bill and two of his long-time collaborators, Pierre Villars and Larry Calvert. Later editions have appeared in 1991, 1997, and 2010. In a preface to the first edition, Professors Villars and Calvert stated that Pearson's Handbook 'Is a comprehensive coverage of intermetallic phases for the period 1913–1982, including re-evaluation of older data when needed', so that it does not simply represent an historical set of data collected from 21,000 publications. During the period 1953 to 1983 Bill was also either Editor, Metals Editor, or General Editor of 26 volumes of Structure Reports published under the aegis of the International Union of Crystallography. The crowning achievement of Bill Pearson's scholarship has to be the publication of his monumental book *The Crystal Chemistry and Physics of Metals and Alloys*, which appeared in 1972. This 806 page monograph was the first book in English to consider the crystal structures of metals in their own right. Its importance can perhaps best be appreciated by the comment of one reviewer who extolled it as 'Possibly the most important book since [Linus] Pauling's *The Nature of the Chemical Bond*'. It would truly be difficult to say anything better than that.

Bill Pearson was elected a Fellow of the Royal Society of Canada (FRSC) in 1960, and was inducted into the Order of Canada as a Member (MC) in 1996. He was also made a Fellow of the Chemical Institute of Canada (FCIC) and of the American Mineralogical Society (FAMS), and was the recipient of a number of scientific awards, including the William Hume–Rothery Award of the Metallurgical Society of the AIMMPE, the Canadian Metal Physics Medal, and the Hume–Rothery Prize of the Metals Society (London). Bill was a no-nonsense type of person with a unique sense of humour. He had no particular use for formality, and particularly disliked any form of pomp and circumstance. Bill became well-known as a teacher from his course on scientific writing that he taught to a wide spectrum of students at the University of Waterloo for several years following his term as Dean of Science. His course was considered to be quite an eye-opening experience by the students, and no doubt many who took his course will have found that they learned a great deal about the fine art of good scientific writing from someone who was himself a masterful writer in the genre.

Bill is survived by his wife of 38 years, Ellen Mary (Pipe) of Elora, Ontario, his son Cedric, daughter Cecily (William Loper), and their mother, Lois J. Pearson of Ottawa, and sisters Jean Stuart of Corpus Christi, Texas, and Christine Garnet of Ottawa.

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*(Author's title given as of the time of writing)*