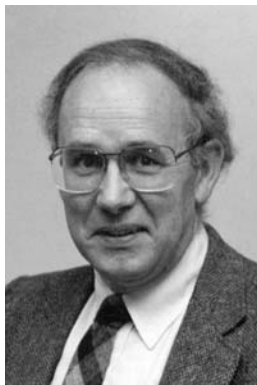


Laurance D. Hall (1938 - 2009)



Laurance David Hall was born in Wapping, London on 18th March 1938. Like so many London children, he was evacuated to the country to escape the bombing during the War. He was educated at the University of Bristol (1st Class B.Sc. Honours in Chemistry), where he earned a Ph.D. (1962) in carbohydrate chemistry under the supervision of Les Hough. He then travelled to Canada for a post-doctoral fellowship with Frank Anet at the University of Ottawa (1962-63).

In 1963, he joined the Faculty of the Department of Chemistry, University of British Columbia (UBC), Vancouver. While working on his Ph.D. he had realized the potential of the then relatively new technique of nuclear magnetic resonance (NMR) spectroscopy for solving problems of the structure and stereochemistry of carbohydrates and other organic compounds. At UBC he set up a very active carbohydrate research group for which NMR spectroscopy was a primary tool. His group studied such topics as halogenation of carbohydrates, structures of fluorinated sugars, properties of glycoproteins, functionalized carbohydrates, e.g. with spin labels, motion of carbohydrates in solution and use of spin-labels as motional probes, and stereochemical dependence of ^1H - ^{19}F coupling constants in sugars. ^1H , ^{13}C and ^{19}F NMR spectroscopy were used for structure determination. He saw how proton spin-lattice relaxation rates could provide spatial information, and became very active in this area when a pulse/Fourier transform NMR spectrometer was installed.

In the early days of ^{13}C NMR, Laurie needed a broadband noise source for ^1H decoupling. With

typical enterprise, he found that a pop music tape belonging to his daughter worked perfectly. His problems arose when he tried to publish the details, including the title of the pop songs used - the Journal editor considered such information too frivolous to appear in a respectable scientific publication. However, Laurie's insistence that the source of the random noise was an important aspect of the experiment eventually led to full publication.

He built the first superconducting magnet NMR spectrometer (270 MHz for ^1H observation) in Canada in 1977. This instrument he later converted to Canada's first MRI scanner, and used it to investigate the applicability of imaging to plant products, including wood. He was a primary organizer and early user of Canada's first clinical MRI scanner, installed in 1983 and opened by the Queen.

Laurie readily acknowledged Les Hough's influence on his career. When he joined the Faculty at the University of British Columbia he followed the Hough practice of having evening seminars at his home, with refreshments.

His successes in Canada led to his being invited to apply for, and then to be appointed in 1982 as the first Herchel Smith Professor of Medicinal Chemistry at the University of Cambridge. He became a Fellow of Emmanuel College. On his return to the UK in 1984 he had to build his Department (literally) from the ground up. He showed typical initiative in choosing timber-framed Swedish home-construction units for the buildings erected on the Addenbrooke's Hospital site - these provided minimal interactions with the fringe fields of the magnets, allowed easy access for instruments, and all-in-all resulted in a very pleasant working environment. The buildings were planned to encourage interactions among students and post-docs. He was prescient in the provision of bedrooms above the laboratories with en-suite facilities and visiting researchers could take advantage of his outstanding hospitality. He thought carefully about all he did and planned, and this attention to detail and consideration for his own team and his research collaborators was a mark of the man. His choice of building materials did not sit well with the traditionalists of the University of Cambridge, but he was eventually able to persuade

them that timber construction was necessary for housing the magnets.

Research at the Herchel Smith Laboratory for Medicinal Chemistry (HSLMC) was primarily devoted to magnetic resonance imaging, although the laboratory had its own 300 MHz high resolution machine, and had access to the MRC Laboratory of Molecular Biology's 500 MHz instrument (which was housed in the HSLMC laboratory). These high resolution instruments were used for analysis of human urine samples of kidney transplant patients in collaboration with medical researchers at Addenbrooke's Hospital, and for early pulsed field gradient applications to high resolution NMR

At the Herchel Smith Laboratory Laurie pioneered a wide range of applications of MRI in entirely new areas of research, fields in which it was often difficult to persuade funders of the merit of the MRI approach. However, Herchel Smith was very happy with his investment and with Laurie's approach and always enjoyed his frequent visits to the Institute. He developed non-medical applications when most other researchers were concentrating on the medical applications. Among these studies were research into flow in porous media, formation of gels and diffusion in gels, and laminar flow mixing. Polymer formation, and the properties of polymers and polymer composites were studied. Much of the work involved collaborations with industry, such as the food industry. There was a stage when the lab was pervaded by the smell of bread baking in an oven inside an imaging magnet. There were MRI studies on the heating of baby food in jars, the cooking of meat, storage changes and migration of lipids and the formation of white blooms on chocolate, food dehydration, and textural changes in food, e.g. following freeze-thawing. The laboratory did many analyses of oil well cores for oil and water content. Some of these studies, such as those involving gels, involved a return to work with carbohydrates.

Medical applications of MRI included a study of osteoarthritis, using high-resolution imaging of animal models in a narrow-bore magnet. The onset and progression of the disease in a single, lightly anaesthetized animal were monitored, and the effectiveness of new medications

evaluated, without the need for sacrificing the animals. Wrist imaging of human subjects constituted part of the arthritis research. Also studied was joint disease in other animals, and cardiac effects of hypertension in rats. Brain research included detection and time lapse studies of pharmacologically mediated changes in cerebral activity in animals using functional magnetic resonance imaging.

Laurie Hall's scientific career was characterized by his enormous drive, energy, and enthusiasm. He had the ability to see what new science had the potential to become important to his fields of research, and to become a pioneer in its development. His enthusiasm spilled over to his private life, as in his home renovations and wine making and instructing his children in rock-climbing and skiing while he was at the University of British Columbia, and his conversion of a 200 year old farm barn in Suffolk into his home while he was at the University of Cambridge.

In considering his association with, and responsibility for the HSLMC, it is important to recognize that this was not a typical University Department. The concept was his and Herchel Smith's; he designed and supervised the building of the Laboratory, planned the research and equipment, was responsible for the education of the graduate students and for other academic matters, collaborated with industry and raised external funding, and wrote large numbers of papers. Few academics have so much responsibility, or must show so much entrepreneurial enterprise.

So much of his life had gone into his Laboratory that he found mandatory retirement very hard to accept, and the adjustments following retirement difficult to make, especially as the University and Medical School could not reach agreement on the future of "His Institute" and even closed it for a period. His health deteriorated not long after his retirement.

He was awarded a Sloan Foundation Fellowship in 1971 and a Killam Research Fellowship in 1982. His honours received during his career included the Corday-Morgan Medal and Prize in 1974, the Interdisciplinary Award in 1987, and the Chemical Analysis and Instrumentation

Award in 1990, all from the Royal Society of Chemistry, the Tate and Lyle Award for Carbohydrate Chemistry in 1972, the Jacob Biely Faculty Research Prize in 1974 from the University of British Columbia, the Merck Sharp and Dohme Award in 1975 from the Chemical Institute of Canada, the Barringer Award from the Spectroscopy Society of Canada in 1981, and an honorary D.Sc. from his Alma Mater, the University of Bristol, in 2000. He was elected to Fellowship in the Royal Society of Canada in 1982, a proud moment for a new Canadian. He became a Fellow of the Chemical Institute of Canada and of the Royal Society of Chemistry.

When Laurie was in high school, a teacher recognized his potential, and gave him the money to attend lectures at the Royal Institution of Great Britain. These so inspired him that he determined to become a chemist. Further, he determined that he, too, would eventually lecture at the RI. This he achieved, in the Friday Evening Discourses and other lectures. In typical Laurie Hall fashion, he caught the attention of the largely youthful audience at a Discourse on MRI by throwing them oranges and challenging the listeners to tell him how many pips the oranges contained, without cutting them open.

In the course of his career he supervised over 100 Ph.D. and M.Sc. students and over 30 post-doctoral fellows and he published over 580 scientific papers - indications of the magnitude of his influence on science and the careers of young scientists. He was a much sought after speaker - while he was at Cambridge he delivered well over 500 invited lectures and seminars to numerous institutions in the UK and overseas. Laurie was very generous in hosting visiting scientists to work in his laboratory, both in Vancouver and Cambridge.

Many NMR spectroscopists will remember with gratitude Laurie's campaign to save Asilomar as the US West Coast site for the ENC meeting when the organizing committee decided it was too small for the increasing numbers of attendees. The committee planned to move the conference to some characterless hotel with conference facilities. This decision aroused Laurie's wrath. The overwhelming support he received caused the committee to reverse its decision, and to work out ways of accommodating the numbers at this delightful and very popular location.

Laurie died suddenly at his home in Kedington, Suffolk, on 28th August 2009, at the age of 71. He is survived by his wife, Winifred Margaret (married in 1962), his daughters Gwendolen and Juliet, his twin sons D'Arcy and Dominic, and six grandchildren. A memorial service will be held at his Cambridge College, Emmanuel. Laurie developed a strong attachment to Emmanuel College, where he had many friends among the Fellows, and where his daughter, Juliet, was married in the Chapel.

Obituaries: The Daily Telegraph published an obituary on October 2, 2009.

Laurie Colebrook
Victoria BC Canada
25 September 2009