

HARRY LAMBERT WELSH, 1910 - 1984

Harry Lambert Welsh began a long association with the University of Toronto with his enrollment in undergraduate physics in 1926. Later, as a professor in the Department of Physics, he brought fame to his Alma Mater with his pioneering studies in Molecular Spectroscopy and Intermolecular Forces. He played a major role in the development of the Department in the 60's, with the establishment of research groups in Theoretical, Atmospheric, and High Energy Physics, and by instituting more democratic procedures in the administration of the department and its programs. Over a period of four decades he stimulated sixty-five Ph.D. students who had the privilege and pleasure to carry out research under his supervision. These scientists have made, and are continuing to make, important contributions to research in a variety of ways in universities, industry, and government institutions across Canada and in other countries.



Harry L. Welsh

Welsh was born on March 23, 1910 on a farm north-east of Toronto. He attended a one-room primary school, showed little enthusiasm for farming, and much preferred study and reading books from a small travelling library, which he credited for sparking a lifelong interest in science. Welsh inherited a passionate love of music from his father, particularly in piano playing, and pursued it at a professional level throughout his life. He completed his high school education at age sixteen, and took up the challenging honours course of Mathematics and Physics at the University of Toronto. Welsh's intention was to specialize in mathematics, but he was soon persuaded to switch to physics by the masterful lectures of John Satterly, which were always accompanied by vivid demonstrations. Fellow students in the honours program included Tuzo Wilson and Byron Griffiths, who later became professors at the University of Toronto.

In addition to his studies in physics, Welsh registered in the Faculty of Music. His daily schedule included physics in the mornings, usually by self-study which he much preferred to lectures, followed by music theory and piano practice every afternoon. In third and fourth years he came under the influence of the dynamic John C. McLennan, F.R.S., Head of the Physics Department, who thought that Welsh spent far too much time on the piano, and asked him one day "When are you going to give up that damned music?"

Welsh completed his Bachelor of Arts degree in 1930 and, after a year of graduate work, decided to continue his graduate studies in Göttingen with James Franck whose personality and work had so impressed him during Franck's visit to Toronto. There he found the physics courses to be exceptionally good, but the big event was the weekly Colloquium, with lively discussions amongst Born, Cario, Eucken, Heitler, Kuhn, Nordheim, Pohl, Sponer, and Teller of the Institutes, and the

many distinguished visitors. With the assumption of power by the Nazis in 1933, followed by the devastation of the great Institutes of Physics and Mathematics in Göttingen, Welsh left Germany and completed his Ph.D. degree in Toronto in 1936. After a six-month stint with industry, he returned to the university as a demonstrator and collaborated with Malcolm Crawford, then leader of the spectroscopy laboratory, in research on Raman spectra of liquids. At the outbreak of World War II, Welsh participated in the service courses given to Army, Navy and Air Force personnel, and then spent two years in Ottawa working on anti-submarine operations and convoy protection with the Royal Canadian Navy. He married Marguerite Ostrander, a school teacher of languages with special interest in French.

Welsh resumed his post at the University of Toronto, was appointed Professor in 1954 and served as Chairman of the Department from 1962 to 1968. This was the period of the most rapid growth of the Physics Department: along with the expansion of existing research groups, new fields of research were established, and the faculty was increased to about 60, to supervise 150 graduate students and teach over 3,000 undergraduates enrolled in physics. The long planning for a new building for physics and astronomy came to fruition on the opening of the McLennan Physical Laboratories in September 1967.

Welsh's interest in molecular physics and spectroscopy focussed on intermolecular forces. For these investigations, his choice was molecular hydrogen, the simplest molecule for experimentation in the gaseous, liquid, and solid states. His excellent intuition for doing the right experiment was the hallmark of his distinguished research career. He is best known for the discovery (in 1949, with Malcolm Crawford and their student Jack Locke) of pressure-induced absorption of homonuclear molecules, for his original contributions to our knowledge of solid hydrogen, and the development of high-resolution Raman spectroscopy of gases. Finally, it may be said that, while he appreciated the importance of precise measurements, Welsh undoubtedly derived the greatest joy from the search for, and observation and elucidation of, new phenomena.

The H.L. Welsh Lectures, presented annually by the world's leading scientists, were inaugurated in 1975 as a celebration of the respect with which the physics community across Canada and molecular spectroscopists internationally held Harry Welsh for his friendship, sincerity and integrity, and for his outstanding scientific accomplishments.

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