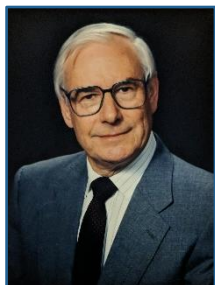


## JOHN CHARLES DOUGLAS (DOUG) MILTON (1924-2022)



**D**oug Milton, BSc (Manitoba, Hons Physics), PhD (Princeton, Physics), only child of the late Frances (Craigie) and William (Bill) Milton. Doug was born in Regina in 1924 but grew up in Winnipeg during the depression and thus did not start school until 7. By all reports he was a good student (high school valedictorian) and very musical, soon joining every choir he could. He also became an accomplished pianist completing the full Royal Conservatory of Music program while in early high school and continued to study and perform through his undergrad years. In his final year of an honours degree at the University of Manitoba he specialized in physics, but when asked by a girl friend's father what a physicist did he had to admit he was not sure.

Based on a suggestion from a good friend he decided to go to Princeton, where he initially started working with Bob Hofstadter developing gamma detectors, but Bob left for Stanford (and subsequently won a Noble prize), so Doug choose Harry Fulbright as a thesis advisor. Many years later, and to the amusement of one of his granddaughters, he said he thought that he chose to work with Harry "because he was so impressed that Harry could lead the cleanup after the Princeton Cyclotron fire, and still exit with a clean white shirt and tie". Together they were the first to measure the 2<sup>nd</sup> forbidden beta spectra of Be<sup>10</sup> and Cl<sup>36</sup>. Princeton was an exciting place to be at the time and Doug enjoyed attending regular seminars also attended by Albert Einstein and Robert Oppenheimer, the latter apparently regularly interrupting the speaker. He also took courses from J.A Wheeler in classical mechanics, from Eugene Wigner in Group Theory, and from David Bohm in the Foundations of Quantum Mechanics.

Doug arrived in Deep River in 1951 to begin working in Nuclear Physics at NRX. He was soon drafted into the Staff House Club where he met the Secretary of the Club, Gwen Shaw. In 1953 Gwen and Doug were married, beginning a wonderful partnership that lasted for more than 65 years, each supporting the other through many transitions and a number of adventures.

The NRX accident in 1952 stopped the physics experiments and since NRU was still under construction, Doug and John Fraser began a "table-top" experiment measuring the beta angular correlation, and thus measured the quadrupole moment of Er<sup>166</sup> the first such measurement on a radioactive element. When NRU came online Doug and John began making fission measurements, making use of a new time-of-flight technique with much improved accuracy and were able to show the double hump nature of the fission barrier. Doug was a key proponent of the Intense Neutron Generator (ING) project that would have put Canada at the fore front of Neutron Physics even today but unfortunately it was not funded. Aside from two sabbatical years, all of Doug's professional career was at AECL, first as Scientist, then Nuclear Physics Branch Head, Director of the Physics Division, and as Vice-President, Physics and Health Sciences, becoming a charter member of the EMC (Executive Management Committee for all of AECL). Doug worked to create an environment where good high quality scientific research could be carried out and actively supported the careers of a number of very successful physicists. He was also active in the overall Canadian Physics community, as a Fellow of the Royal Society, and of the American Physics Society, President of the Canadian Association of Physicists (1992-1993) and member of several

Advisory Boards, most notably ABOT (the Advisory Board On TRIUMF) and the advisory board for the Tokamak de Varennes and CFFTP (Canadian Fuel and Fusion). Upon retirement Doug became one of CRNL's first researchers emeritus, actively participating in Accelerator Mass Spectroscopy Experiments (AMS). Gwen had become an expert at preparing the low background samples, and so they are able to attend several international AMS conferences together as professional collaborators.

As a branch head, Doug gave a presentation to senior management that included the suggestion that the future of nuclear physics lay in heavy ion physics and that they should consider developing a suitable facility. This kicked off an innovative project to build a superconducting cyclotron, however funding was tight and progress slow. Despite taking on ever more senior roles, Doug always tried to ensure any remaining research funds were directed to completing the project. Eventually the full project with the Tandem accelerator injecting into the Superconducting Cyclotron came online and TASC was born. It was an excellent example of low budget Canadian ingenuity, and a significant member of the small but very active heavy ion research facilities. When ACEL decided that nuclear physics was no longer part of their core mission and thus decided to close TASC, Doug worked tirelessly to find alternative homes for TASC. Management was unwilling to listen, and when it was clear AECL would not allow anything other than scrapping the facility, Doug severed all relations with the company.

One of Doug and Gwen's big projects was their house, a truly joint project. From Gwen acting as the general contractor, directing the work on site while pregnant, to Doug's state of the art electrical wiring it was a special project. Their kids have a fond memory of Gwen and Doug stopping work laying tiles in a bathroom to leave for a New Year's eve party, only to return a few hours later to finish the project. They were also avid gardeners and created a large garden with 2 waterfalls, 4 pools and a wandering stream connecting them as soon as they were able. They won several Trillium awards for the garden, and Doug served a term as president of the Deep River Horticultural Society.

Gwen and Doug were passionate about Deep River, feeling that it had provided a great home for them and their kids so in 2001 Gwen was one of the founders of the Deep River and District Community Foundation (DR&DCF), with strong support from Doug. In the early years Doug was Foundation treasurer and later acted a couple of terms as Chair. In many ways the foundation was the culmination of lives spent serving the community, starting with the Staff Hotel committee, through building the yacht club (Doug did much of the original wiring), and the Childs auditorium project.

Bruce Milton, Vancouver BC