

Congratulations to Dr. Robert L. Clarke on appointment as Professor Emeritus

Thursday, June 1, 2000

In the spring of 2000, President Richard Van Loon, acting on the recommendations of the Faculty of Science and the Department of Physics and following strict criteria for bestowing this high honour, appointed Robert (Bob) Clarke as Professor Emeritus.

A reception was held at the Carleton University Club on 1 June 2000 following the final OMPI seminars of the year. The reception was to thank the external graduate supervisors and course instructors for participating in the research and teaching life of the Department of Physics and most especially to celebrate Robert Clarke's appointment. Public remarks were made by John Armitage (Chair of Physics), Peter Watson (Dean of Science), Paul Johns (OMPI Director), Vera Clarke, Don Wiles ((retired) Professor of Chemistry), and last, by Bob Clarke.

The following sketch of Robert Clarke's career to date is excerpted from the 28 October 1999 submission written by the Tenure and Promotion Committee of the Dept of Physics (members for 1999-2000: John Armitage, Stephen Godfrey, Bog Jarosz, Dean Karlen, Lazer Resnick).

Professor Clarke has had a long and distinguished career in Physics and has contributed tremendously to the academic life of Carleton University. He graduated with a Ph.D. from McGill in 1948 and pursued a career in Nuclear Physics, working first as a Scientific Assistant at the NRC in Ottawa, and then moving to AECL at the Chalk River Labs. At that time, he was working on the physics of nuclear reactions and most of his early papers are in this field. He then became interested in particle reactions at higher energies and took a sabbatical leave at the Rutherford Laboratory in the U.K. where he had an appointment as Principal Scientific Officer. He participated in experimental work on proton scattering using the early cyclotrons and published works in that area. It was after he returned to AECL that his contact with Carleton's Physics Department began.

In 1964, the close collaboration between Carleton's Physics Department and the National Research Council had been strengthened by the appointment of Dr. E.P. Hincks, from the NRC's High Energy Physics group, as Chair of the Department. Dr. Hincks established a clear direction for the Department in this discipline and started to build up the group. Professor Clarke was one of the first people to join, initially as a Visiting Honorary Research Professor, commuting regularly from Chalk

River and then as a Full Professor. During this period, he pioneered the building of a 3 MV accelerator, known as the Dynamitron. This was a joint project with the University of Ottawa and both Departments worked closely together, to build and install the machine in the basement of the Physics Department at the University of Ottawa. Under the Directorship of Professor Clarke, the Dynamitron Lab produced data for several graduate theses at both the M.Sc. and Ph.D. level.

High Energy Physics was developing rapidly in those days, and new accelerator labs were springing up in many places around the world. In the pursuit of still higher energies, Dr. Hinck's group decided to concentrate their efforts at the Brookhaven National Laboratories, on Long Island near New York. It was at this point that Professor Clarke took an important decision that was later to have great implications for the department. He decided to move into the discipline of Medical Physics. He developed and tested several devices: tomographic imaging by Compton scattered gamma rays from ^{60}Co , and absolute bone density measurements using gamma ray scattering. The papers he published in the early to middle seventies attest to his success in this area. Following a sabbatical leave spent learning about the rapidly rising medical uses of ultrasound, a breast imaging system was developed based on conical focussing. Professor Clarke continues to work in the ultrasound area to the present day, and is considered an authority on the subject.

In the mid-eighties, the Department decided to move into a second major research area. Because of Professor Clarke's pioneering work in Medical Physics this seemed to be a natural area to concentrate on. In 1988, the first faculty member in Medical Physics was recruited and currently there are three faculty and eleven adjunct professors working in this area. The on-campus research has expanded from ultrasound to x-ray imaging and magnetic resonance imaging. Overall, this choice of discipline has been very good for the department and has attracted a large number of graduate students (35 students have graduated in Medical Physics and there are 17 'in the pipeline' for a total of 52). Through Professor Clarke's influence, a large group of Adjunct Professors have been recruited from professionals working in the local hospitals. Professor Clarke was also instrumental in the founding of what is now known as the Ottawa Medical Physics Institute. As well as the faculty and adjuncts, this includes many other researchers working in the local area. There are now 30 professional members from local hospitals, government organizations and Carleton University. They hold monthly seminars and meet to exchange views on the different aspects of what is now a rapidly growing science: medical physics.

Professor Clarke has also been active in administration. He was appointed Chair of the Department in 1971 and continued in that position until 1977. He has served the Department, the Faculty and the University well, on numerous committees. He has been appointed to several provincial committees, including the Council of Ontario Universities' Physics Departments committee. At the national level he has played an important role in the Canadian Association of Physicists having been an Executive Member and Secretary-Treasurer as well as several other posts in this same organization. He has also been active at the international level, as he was appointed Secretary-General of the International Union for Physical and Engineering Science in Medicine.

Although Professor Clarke officially retired 12 years ago, he remains very active in research and in service to the University. He has formed a collaboration with researchers at the Institute of Cancer Research, Royal Marsden Hospital in Surrey, England. There he has been involved in the use of ultrasound for the treatment of cancers. The principal objective is the treatment of certain cancer sites by tissue coagulation through intense heating. Other applications in obstetrics and vascular occlusion are also feasible. His latest publications in 1994 and 1995 and most recently in 1999, result from this work. He has also given several professional talks on the subject including an invited CAP lecture last year at Laurentian University. Professor Clarke continues to provide important service to the University community. Most recently he was asked to help sort out the problems concerning the Universities' Radiation Safety License. He was able to sort things out with the Atomic Energy Control Board, and additionally made recommendations that set the Radiation Safety issue on a firm footing.

In summary, Professor Clarke provides an indispensable intellectual stimulus for the rest of the department. His imagination and breadth of knowledge serve not only as a resource but as a goad for his colleagues and has produced many successful innovations. His latest project, mapping the temperature of ultrasound heated tissue using magnetic resonance imaging techniques is a reminder that he still has much to give to the world of Medical Physics research. In recommending him for promotion to Professor Emeritus the committee is mindful of this and looks forward to many more stimulating interactions with him. We unreservedly endorse this recommendation.