

## Paul R. Gorham (April 16, 1918—November 9, 2006)

Constance G. Nozzolillo · Harriet Gorham · Govindjee

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It is with sadness that we announce the death of the eminent Canadian plant physiologist, Paul Gorham, in Edmonton, Alberta, on November 9, 2006 at the age of 88 (see his photograph taken in 1999). A memorial service was held at the Westwood Unitarian Congregation in Edmonton on Thursday, November 23, 2006.

Paul was born in Fredericton, New Brunswick; he obtained his first degree at the University of New Brunswick in 1938, followed by a Master of Science at the University of Maine, Orono, Maine, USA in 1940. He then moved westward to Caltech, Pasadena, California, USA to pursue a PhD, received in 1943 under the direction of Fritz Went, in a study of the growth factor responses of pondweed (Gorham 1945). At Caltech, he also served as a teaching assistant to Robert Emerson, known for his discovery of the 'Photosynthetic Unit' and later of the 'Emerson Enhancement Effect'.

In 1943, Paul was employed in his first full-time scientific position by Agriculture Canada at the Central Experimental Farm in Ottawa, Ontario where he worked on the physiology of rubber-bearing plants as part of Canada's war effort (see e.g., Gorham 1946). In



A 1999 photograph of Paul Gorham

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C. G. Nozzolillo (✉)  
306 Crestview Road, Ottawa, Ontario, Canada K1H 5G6  
e-mail: cnozzoli@rogers.com

H. Gorham  
#101, 25 des Châteaux-des-Bois, Gatineau, Québec,  
Canada J9H 6V7  
e-mail: hgorham@sympatico.ca

Govindjee  
Department of Plant Biology, University of Illinois, Urbana,  
IL 61801-3707, USA  
e-mail: gov@uiuc.edu

1945, he moved across town to Sussex Drive to take a position with the National Research Council of Canada (NRCC); there he worked on vitamin analysis in stored foods (see e.g., Gorham 1948). In 1948, the NRCC was reorganized, and a new Plant Physiology Section was formed with K. A. Clendenning as head. Paul worked with Clendenning on the photochemical activity of chloroplasts (see e.g., Clendenning and Gorham 1952) until Clendenning's abrupt departure in 1952. Paul then took over as head of the section and, with C. D. Nelson, M. J. Perkins, H. Clauss, D. C. Mortimer, J. A. Webb and P. Trip, continued research in photosynthesis and the related phenomenon of translocation

(see e.g., Trip and Gorham 1968). During this period, he became interested in water blooms and initiated a series of studies on the isolation and identification of toxins produced by cyanobacteria (blue-green algae), with the cooperation of E. O. Hughes, A. Zehnder, C. T. Bishop, E. F. L. J. Anet, J. McLachlan, U. T. Hammer, W. K. Kim, H. Konst, P. D. McKercher, A. Robertson, J. Howell and B. Stavric (see e.g., Konst et al. 1965). In 1969, he became a professor of botany at the University of Alberta in Edmonton, retiring as emeritus professor in 1983. There he continued his pioneering research on the translocation of photosynthetic assimilates (see e.g., Hoddinott and Gorham 1976) and cyanobacterial toxins (see e.g., Carmichael et al. 1975). Paul also took part in studies of submersed aquatic macrophytes in relation to thermal effluents. In 1974, he was a co-organizer, with Sam Aronoff and Jack Dainty among others, of the first of a series of international meetings on phloem translocation held in Banff, Alberta.

Paul gave a great deal of his time to a range of professional associations and community activities. He was very involved in the formation of the Canadian Society of Plant Physiologists (CSPP) and was its first president in 1958. He also played a major role in the creation of the International Association for Plant Physiology and the Canadian Botanical Association (CBA), and was awarded the Mary E. Elliott Medal in 1979 for services to the latter. In Edmonton, Paul served on the Board of Directors of the Edmonton Art Gallery and the Board of Trustees of the Friends of the University of Alberta Devonian Botanic Garden for many years. He was a driving force behind the creation of the Garden's beautiful five-acre Kurimoto Japanese Garden, opened in 1990. For these and other contributions to his country, he was awarded the Canadian Centennial Medal in 1967 and the Queen Elizabeth Silver Jubilee Medal in 1978. His scientific contributions, apart from a long list of publications (72) in established journals, were recognized by his election as a Fellow of the Royal Society of Canada in 1961, the bestowment of an honorary D.Sc. by his alma mater, the University of New Brunswick, in 1978, his election as a Fellow of the Rawson Academy of Aquatic Science in 1979, the awarding by the CSPP of its Gold Medal in 1987 and by the CBA of its Lawson Medal in 1988.

Paul's publications also include two historical reviews: "The first 25 years of the CSPP", co-authored with Tony Bidwell (Gorham and Bidwell 1983) and available on the CSPP website (<http://cspp-scpv.ca> under\_Archives), and most recently, at the behest of one of us (Govindjee), "Photosynthesis Research in

Canada from 1945 to the early 1970s" (Gorham and Nozzolillo 2006). Further, Gorham (1968) wrote an excellent tribute to Gleb Krotkov, a pioneer of plant physiology in Canada.

Edwin Cossins (University of Alberta, Edmonton, Canada) writes about Paul:

*"As a member of the Department of Botany at the University of Alberta since 1962, I remember our elation when Paul Gorham decided to join us in 1968. By then he was one of Canada's most distinguished plant physiologists and a Fellow of the Royal Society of Canada. Paul quickly adapted to his new academic environment and played a key role with Larry Bliss and Jim Mayo in setting up the controlled environmental facilities for the new biological sciences building. Paul served as Chairman of the Botany Department (1971–1979), and had an active research group. Several very promising students received their graduate degrees under his able supervision. Paul was a quiet, unassuming person and a scholarly gentleman with a very broad range of interests. His many contributions to our university, the Devonian Botanic Garden and to Canadian plant physiology make it clear that he will be long remembered."*

John Hoddinott (University of Alberta, Edmonton, Canada) recalls:

*"Paul was a tireless worker and administrator. Even then, his very young daughter had to remind him late one afternoon in the lab that "it's Christmas Eve, daddy." It was not all work, however, as another evening was spent at Paul's house with Ian Wardlaw, a visitor from Australia, showing that same daughter how to fold paper to make water bombs. Paul was always supportive of his students and their work and the range of his interests attests to his time management skills. When Frits Went came to the University of Alberta to receive an honorary degree, it was a privilege to share lab space with them. Paul and Fritz shared a passion for research in any time that was available."*

Mary Spencer (University of Alberta, Edmonton, Canada) writes:

*"Dr. Gorham was a man of great intelligence and abilities, and at the same time humility. He gave much encouragement and support to others, and was quietly sensitive to their needs. One could not ask for a more generous and understanding friend."*

*In like manner, he willingly gave his time and energies to assisting in the development of professional organizations as well as the Botanic Garden and the Edmonton Art Gallery. Our lives are much richer because of Paul Gorham.”*

Bodo Stavric (Health Canada, Ottawa, Canada) remembers:

*“I will remember Dr. Paul Gorham not only as a scientist, but also as a compassionate and warm human being. I recall my own story from when I worked with him in 1963. I became ill with fever and cough after working with toxic components in the cold room. The doctors declared I had tuberculosis (TB), and I was admitted to the former Ottawa TB Sanatorium. What has remained with me is that Dr. Gorham, who regularly visited me, sat beside my bed talking with me for hours even though TB is infectious. I marveled at his courage to sit bravely next to me. His actions were of great comfort for me and my wife. Fortunately, after five weeks, the results for TB came back negative, but Dr. Gorham’s care and concern is engraved in my mind forever.”*

Paul leaves his widow, Evelyn, to whom he was married for 63 years, three children (John, Arthur, and Harriet), and five grandchildren (Katherine, Dan, Megan, Graeme, and Hannah).

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