

Historical perspectives of The American Association for Thoracic Surgery: Dr Wilfred G. Bigelow

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Dr Wilfred Gordon Bigelow was the 55th president of The American Association for Thoracic Surgery (1974-1975). He was born in Brandon, Manitoba, Canada, on June 18, 1913. As a boy, he spent winters in the nearby provincial conservation lands, where he witnessed firsthand the wonders of nature. He subsequently served as a director of the National Audubon Society and Chairman (1958-1987) and member of the Board of Trustees (1980-1990) of the Nature Conservancy of Canada. This keen observation of his natural surroundings would later have a significant impact on his clinical and research interests.

Dr Bigelow completed his undergraduate training at the University of Toronto (BA 1935, MS 1938, MD 1938) and was enrolled in the Gallie Course in surgery at Toronto General Hospital (TGH) from 1938 to 1941. His training was interrupted by the breakout of hostilities, and he served in the Canadian Army and as a Graded Surgeon between 1941 and 1945. He served in England, Normandy, and Northwestern Europe. Upon his return to Canada, Dr Bigelow had already developed a clinical interest in surgery of the chest. However, at the time, no formal subspecialty training in cardiothoracic surgery was available, so he traveled to Baltimore, Maryland, for a clinical and research fellowship at Johns Hopkins University, under the supervision of Dr Richard Bing and Dr Alfred Blalock.

After this fellowship, he was appointed to the surgical staff at TGH in 1947. Dr Bigelow served as Head of the Division of Cardiovascular Surgery at TGH from 1956 until his retirement in 1977. In addition, from 1947 to 1977, he was the Director of the Cardiovascular Laboratory at the Banting Research Institute, where his research team conducted pioneering research in hypothermia, hibernation, and cardiac pacemaker technology.

Dr Bigelow remains well recognized for his pioneering contributions in the field of hypothermia. He has authored a book¹ entitled *Cold Hearts: The Story of Hypothermia*



With best wishes
 Wilfred G. Bigelow

FIGURE 1. A, Dr Bigelow presenting the Bigelow Book Award to the senior author. In attendance, from left to right, standing: Dr Richard D. Weisel (American Association for Thoracic Surgery [AATS] member); Dr Ronald G. Baird (AATS member); Dr Wilfred G. Bigelow (AATS member and its 55th president); Dr Catherine Whiteside (Dean of the Faculty of Medicine, University of Toronto); Mr Umberto deBoni; Dr Catherine Wittnich (Director of the Collaborative Cardiovascular Sciences Program); and Dr John S. Ikonomidis (AATS member). Seated, from left to right: Dr Vivek Rao (AATS member); Mr Saeid Babaei; and Dr Michael A. Borger (AATS member). B, Dr Bigelow's signature.

and the *Pacemaker in Heart Surgery*. Interestingly, his keen observation of his natural surroundings was what led him on a path of discovery. His initial research intent was to identify "hibernin," a compound thought to allow hibernating mammals to reduce their metabolic demands during winter. He hypothesized that the purification and characterization of this compound would lead to an effective strategy for myocardial protection of patients during open-heart surgery. In reality, he stumbled upon the basic principle of hypothermic preservation, which remains critical to many surgical procedures today.

Despite his local reputation as a giant in Canadian cardiovascular history, Dr Bigelow is less well recognized internationally for his important educational efforts. However, he established the first cardiovascular surgical training program in Canada. Dr Bigelow's numerous contributions to the development of medical science and

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cardiovascular surgery for the treatment of heart disease should be noted. Performing only the second mitral commissurotomy in Canada in 1949, Dr Bigelow greatly contributed to the establishment of the standard closed-heart surgical procedure² in the 1950s.

In addition, Dr Bigelow was one of the few surgeons who adopted the internal mammary artery implant procedure. Also known as the Vineberg procedure (named after Dr Arthur Vineberg, another Canadian surgeon, from Montreal), the effectiveness of this technique soon came to light when Dr Bigelow's results were presented at our association's annual meeting in 1962, with publication the following year. These efforts prompted the development of modern coronary surgery,^{3,4} with publication of Favaloro's report⁵ in 1967.

Dr Bigelow's contribution toward the development of the cardiac pacemaker is worthy of recognition. Working in collaboration with Dr J. C. Callaghan and Dr J. A. Hopps of the National Research Council of Canada, Dr Bigelow developed and tested the first artificial cardiac pacemaker for human use⁶ in 1951. The external device's design and results were published in a paper that same year, which became the foundation for subsequent technologic refinements leading to the birth of the modern, implantable cardiac pacemaker.

Between 1947 and 1965, Dr Bigelow performed a series of experiments with the Cardiovascular Laboratory at the Banting Research Institute to identify the physiology and medical benefits of inducing and reversing human hypothermia. His work involving hypothermia had monumental, lasting impact when the first open-heart surgery in humans was made possible in 1953, and his strategy soon became the standard for myocardial protection during cardiac surgery.

In 1958, Dr Bigelow directed the establishment of the TGH Cardiovascular Surgery Unit in an effort to concentrate the provision of cardiac care within the hospital. In addition, Dr Bigelow organized the first Canadian interhospital training program in cardiovascular surgery involving the 3 adult institutions affiliated with

the University of Toronto: TGH, Toronto Western Hospital, and St. Michael's Hospital. From 1958 until Dr Bigelow's retirement in 1977, approximately 70 surgeons received their training through the cardiovascular surgical program. Today, the award for the most outstanding graduate of the Cardiovascular Sciences Collaborative Program at the University of Toronto is aptly named the Bigelow Book Prize. Figure 1 illustrates a former gathering of Bigelow Book Prize winners, many of whom are current members of our association.

In recognition of his international stature, Dr Bigelow became an Officer of the Order of Canada in 1997 and was inducted into The Canadian Medical Hall of Fame in 1997. Dr Bigelow's career has been celebrated with numerous distinctions, and his work has had prominent influence in directing and refining the standards of cardiothoracic surgery. Outside of his professional medical career, he has maintained an active interest in the outdoors, became a hunter and angler, and devoted much effort toward the cause of environmental conservation. A true pioneer, surgeon, clinician, and scientist, Dr Bigelow's legacy continues to be an integral part of the field of cardiothoracic surgery, and without doubt, will remain a source of inspiration for many in the years to come.

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