



# Sven J.K. Paulin



*Photograph courtesy of Ferris M. Hall, MD*

Dr. Sven Paulin passed away suddenly on January 10th, 2014, at the age of 87 years. Dr. Paulin, former Radiologist-in-Chief at the Beth Israel Hospital, was highly regarded and honored throughout the world by both the radiology and the cardiology communities for his innovative contributions to cardiothoracic imaging. At the time of his sudden and unexpected passing, he was Professor Emeritus at Harvard Medical School and had only recently retired from active participation in clinical work.

Sven Paulin was born in Bad Muenster am Stein, Germany, in 1926. Despite growing up in a protective parental home, his adolescence and young adulthood were strongly influenced by the harrowing reality of World War II and its aftermaths. Dr. Paulin received his MD degree in 1951 from the Johannes Gutenberg University of Mainz, Germany. In 1953, he immigrated to Sweden, where he completed his residency-equivalent training in Stockholm and later

received his PhD degree from the University of Gothenburg. At this point in history, it was self-evident that German-born individuals were not universally well-received. Therefore, the warm welcome that Sweden extended to him remained a highly cherished memory for Dr. Paulin and left him with a deep-felt need to strive for tolerance, fairness, and helpfulness which accompanied him for his entire life.

In the 1950s, Sweden was a major hub of modern radiology. Its academic structures and institutions provided an ideal space for a creative, curious, and innovative scientist such as Dr. Paulin. His research soon focused on the imaging of the coronary arteries. In particular, he became interested in technical approaches to coronary artery imaging that would obviate the need to insert a catheter directly into the coronary ostia, a risky procedure. Rather than direct catheterization, Dr. Paulin developed a technique that would, by spraying contrast material near the root of the aorta, still provide sufficient image quality to assess the morphology and the blood flow within the coronaries. The resulting imaging studies provided an important basis for the rapidly developing field of cardiac surgery. The magnitude of this achievement

cannot be overestimated. It included not only the planning and conduct of the clinical procedures, but also the creation of the theoretical, experimental, and practical framework of the project, down to the hand-manufacturing of the catheters that were inserted. Dr. Paulin kept the molds used for building these catheters in his desk during his entire career. The novel technique developed by Dr. Paulin became quickly and widely adopted throughout Europe. His doctoral thesis, "Coronary angiography: a technical, anatomic, and clinical study," written nearly 50 years ago, was immediately recognized as a landmark contribution.

In 1968, Dr. Paulin was invited by Dr. Herbert Abrams to become Visiting Professor at Stanford University, CA, and in 1969 he followed Dr. Abrams to the Peter Bent Brigham Hospital in Boston, MA. In 1970, Dr. Paulin accepted the position of Radiologist-in-Chief at the Beth Israel Hospital. On his arrival, the facilities of the radiology department were redesigned to include a state-of-the-art five-room angiographic suite and dedicated research laboratories. The angiographic suite housed the equipment and instrumentation for all angiographic and interventional procedures, and its layout promoted the concepts of equipment-sharing and cost-saving. This environment further stimulated Dr. Paulin's pioneering research activities. He was among the first to study the side effects of intravenous contrast material, and he investigated how and when contrast material might trigger cardiac arrhythmias. He studied the phenomenon of blood clot formation around catheters, analyzing different concentrations and viscosities of contrast material. His group was the first to use temporary heparin administration to minimize clot formation, a practice now widely adopted. Sven also was among the first to use computers for analyzing coronary angiograms to measure potential narrowing of the vessels, and the resulting impairment of blood flow. This work anticipated the computer age in angiography, as its instrumentation and technique were based on the principles later used in digital subtraction angiography. He studied the longitudinal evolution of coronary plaque formation and investigated the effect of dietary changes and smoking cessation on angiographic findings. He studied the efficacy of balloon dilatation of the coronary arteries and found that it could be improved if the plaque-rich area was perfused with an oxygen-carrying fluid while the balloon was inflated. Later in his career, Dr. Paulin was among the first to use magnetic resonance imaging (MRI) to measure the phosphate and sodium distribution in isolated perfused hearts and to explore the use of MRI to assess the major coronary arteries. In 1974, Dr. Paulin's achievements at Beth Israel Hospital were honored by making him the first recipient of an endowed chair donated by the family of Miriam H. Stoneman.

As early as 1974, Dr. Paulin was prescient in his support for the department's pioneering invention of Computerized Language Information Processing (CLIP) and the early use of voice recognition to generate structured radiology reports. Together with his colleague, Dr. Morris Simon, he helped introduce a systematic approach to resident selection which emphasized more equitable gender distribution and diversity. He assembled a talented and multicultural faculty, chosen to meet the needs of the expanding department. He was a beloved mentor for junior staff members, many of whom went on to hold leadership positions at other academic centers. His warmth, generous spirit and sense of humor helped create an environment where faculty and trainees were able to both pursue their individual

passions and help advance the tripartite mission of their department.

Dr. Paulin continued to foster his international relationships in the interests of the department and, together with his friend, Dr. Alex Rosenberger, Department Chief of Radiology at Rambam University Hospital in Haifa, Israel, built an exchange program which remains active today. Wherever he could, Sven was supportive of radiologists from foreign countries, especially those with unstable or oppressive regimes, and his ample correspondence in this regard gives proof of his ongoing willingness and efforts to help and support these colleagues, both on a professional and on a personal level. By doing so, Dr. Paulin passed along what he had himself received as a junior radiologist in Sweden. He also actively collaborated with the research efforts of his colleagues outside of radiology, and was a vibrant participant in the cardiology clinical conferences. Together with Dr. Robert Edelman, Dr. Paulin was a strong proponent for the establishment of an independent collaborative Radiology-Cardiology cardiac magnetic resonance imaging unit at the Beth Israel Hospital, a unique relationship that allowed that unit to flourish in the research, clinical, and educational arenas. A testament to his collaborative spirit was the establishment of the annual Radiology-Cardiology Sven Paulin Lectureship in Cardiovascular Imaging on the occasion of Sven's 80th birthday – with the 14th Paulin Lectureship delivered by Dr. Pamela Douglas earlier this year.

Dr. Paulin was an avid sports enthusiast, a voracious reader, a dedicated on-line chess player, as well as an art, oyster, and champagne lover. Conversations with him were always stimulating and strongly tinted by his sharp mind, his wit, and his humor. He had that wonderful combination of intellectual integrity, judgment, wisdom, curiosity, and humanism that so often personify the “homo academicus.” Sven was outspoken and unafraid to take controversial positions, but the tone of discussions always retained the spirit of mutual respect and tolerance. Dr. Paulin loved people, and people loved him. He was a source of encouragement and strength for his wife Birgit, their four children, Susanne, Magnus, Helena, and Viveca, and their five grandchildren. To honor his memory, his family created the “Dr. Sven Paulin Research Fellowship in Cardiothoracic Imaging” at the Department of Radiology at Beth Israel Deaconess Medical Center.

Dr. Paulin's professional legacy, including letters, publications, and objects, such as his legendary catheter molds, now reside at the Countway Library. The most durable part of Dr. Paulin's professional legacy, however, are the multitude of radiologists that he knew and mentored, and who continue to live and teach their versions of Dr. Paulin's vision of radiology around the globe. Perhaps the one “statement” that best encapsulates his remarkable career is a commemorative button, crafted from the blue and gold colors of the Swedish flag, which was created when the BIDMC radiology department celebrated “Sven Day” on October 13, 2006. The button reads . . . “We (heart symbol) Sven”.

Respectfully submitted,

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