

Richard John Bing (1909-2010)

The "man for all seasons" passes to the Elysian fields of Science

Richard John Bing, one of the most eminent figures of Cardiology of the 20th century, father of cardiac metabolism and a pioneer of cardiac catheterization, classical music composer and author, who has been called a "Renaissance man" and "a man for all seasons," died on Monday, 8th November 2010, at his home in La Cañada Flintridge outside Los Angeles. He had celebrated his 101st birthday almost month earlier and had been suffering from heart failure.

Richard John Bing was born in Nuremberg, Bavaria on 12th October, 1909. Between 1929 and 1934, he attended Medicine initially at the University of Berlin, Munich and Vienna. The rise of Nazis and Adolf Hitler forced him to flee Germany to Bern, Switzerland, where he was employed as investigator in deQuervain's laboratory studying thrombus formation. In 1935, he received the second MD from the University of Bern and, afterwards, joined the Carlsberg Biological Institute in Copenhagen where he worked between 1935 and 1936 under the direction of Albert Fischer (1891-1956), who was student of the famous vascular surgeon Alexis Carrel (1873-1944). During the 4th International Conference of Experimental Cytology which took place in Copenhagen on August 1936, Bing will meet with Carrel and the famous American aviator and inventor Charles Linbergh (1902-1974); Bing will help Carrel and Linbergh to present a device for extra-pulmonary circulation specially designed for heart transplant operations. From 1936 to 1937, he was a fellow at the Rockefeller Institute in New York. Bing, then, served a year as surgical intern at Presbyterian Hospital in New York, where he continued his work on organs blood perfusion, his co-operation with Allen Whipple led him to the University of Columbia, whereas he met the love of his life, Mary Whipple. John and Mary got married in 1938 and lasted till 1990, when Mary died of coronary heart disease. The same year, 1938, Bing published his first paper at *Science* entitled: "*The perfusion of whole organs in the Lindbergh Apparatus with fluids containing hemocyanin as respiratory pigment*", an examination of the possibility that hemocyanin, an oxygen-binding pigment found in horseshoe crabs and squid, could help meet the oxygen needs of isolated heart. During his stay at Columbia, Richard will continue his work on the vasopressin peptides and the path-physiology of renal hypertension and of renal failure following crush injury. The entry of the US into World War II led Bing to enroll for medical license as an assistant resident at the John Hopkins School of Medicine; he served as a Lieutenant Colonel in the chemical warfare corps in Edgewood Arsenal in Maryland and then in Germany. During an employment at John Hopkins, Bing in 1947 will collaborate with the famous surgeon Alfred Blalock (1899-1964) and the famous paediatric cardiologist Helen Taussig (1898-1986) and describe the *Taussig-*

Bing syndrome, a cyanotic congenital heart defect. He was also the first who managed to estimate the exact hemodynamic features of twenty congenital heart defects and he established the first investigational laboratory for cardiac catheterization. In 1948, Bing will start studying the cardiac metabolism employing the technique of cardiac catheterizations; his studies were synopsised in a series of six milestone articles published at various prestigious scientific journals such as *American Journal of Medicine* and *Journal of Clinical Investigation*. In 1959, he became Chair of Medicine at the Wayne State University in Detroit Michigan and head of a large clinical fund. In 1964, working with his wife's cousin, physicist George Clark of the Massachusetts Institute of Technology, **Bing developed the use of positron-emitting radioisotopes to monitor coronary blood flow in humans, laying the foundation for modern PET imaging.** During his long scientific career published over than 500 papers, with a wide range of subjects on cardiology such as cardiac metabolism, the role of kidneys in hypertension, the catheterization of coronary sinuses, the use of PET technology for measuring the blood flow in coronary arteries, the mechanisms of graft rejection and septic shock, as well as studies on COX-2 inhibitors and the role of nitrogen monoxide. Bing will receive during his career with numerous distinctions and prizes.

Except from Medicine, music also played an important part in Dr. Bing's life; Bing wrote his first composition at the age of 7 years. He published more than 300 musical scores, including a two-hour "Missa", which was performed for the first time in the St. Stephens Cathedral in Vienna on 30 October, 1993 under the direction of Friedrich Wolf. He also published numerous articles on History of Medicine. He wrote also four books of fiction.

On the occasion of Bing's 100th birthday, Microsoft commissioned a short biographical video called "Para Fuera". Bing is survived by a daughter, two sons and numerous grandchildren and great-grandchildren.

Three days after the death of Richard John Bing, we both authors signing this short obituary published in Greece their monograph entitled: "Following the beats of heart and the sounds of music: sketching out the life and work of Richard John Bing".

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