

In Memoriam:

Donald N. Ross

(1922–2014)

With the passing of Donald Nixon Ross, DSc, FRCS, on 7 July 2014, at the age of 91, cardiac surgery lost one of its most innovative and daring pioneers. Dr. Ross performed the United Kingdom's first heart transplant in 1968. He achieved even greater renown for developing the pulmonary autograft procedure, in which a patient's pulmonary valve is used to replace his or her damaged aortic valve.

Born in Kimberley, South Africa, in 1922, Donald Ross began his medical education at the University of Cape Town, where he excelled in his studies. A fellow student was Christiaan Barnard, who would later perform the first human heart transplant.

On graduating in 1946 with first-class honors and a university gold medal, Dr. Ross received the 2 top house appointments at Groote Schuur Hospital. In 1947, he eagerly accepted a 2-year scholarship to continue his studies in England. At first, he performed chest and esophageal surgery in Bristol, under the direction of famed thoracic surgeon Ronald Belsey. Dr. Ross became a Fellow of the Royal College of Surgeons (1949) in a remarkable 2 years, instead of the usual 3.

In the early 1950s, he was drawn to cardiac surgery, especially after watching Russell Claude Brock (later Lord Brock), Britain's foremost cardiac surgeon, perform aortic valve surgery at Guy's Hospital, in London. Dr. Ross moved to London and worked with Brock for a number of years, first as a research fellow in 1953, then as senior thoracic registrar in 1954. During this period, Dr. Ross made important contributions to the development of open-heart surgery, introducing innovative methods of hypothermia and a pump-oxygenator of his own design. In 1958, he was invited to become Brock's colleague as a consultant cardiovascular surgeon. Dr. Ross also served the National Heart Hospital in London in various consultant positions and became a senior surgeon there in 1967. He was appointed director of the Department of Surgery at London's Institute of Cardiology in 1970. In the operating theatre, he was known for his outstanding technical abilities and relaxed demeanor.

Dr. Ross was particularly interested in the treatment of valve disease. In 1961, he became the first to use a homograft for aortic valve replacement. He also pioneered the use of aortic homografts for reconstructing the right ventricular outflow tract. In the late 1960s, while at the National Heart Hospital, he made what he considered to be his most noteworthy contribution to cardiac surgery: the pulmonary autograft procedure, more widely known as the Ross procedure. This operation involved transferring the pulmonary valve to the aortic position and then placing an aortic homograft valve in the pulmonary position. The patient was spared the need for anticoagulants and eventual valve replacement.

In 1968, Dr. Ross performed the first heart transplant in the United Kingdom. The patient, a 45-year-old man, survived for 46 days before succumbing to infection. Dr. Ross performed 2 more heart transplants before deciding, along with most



Denton A. Cooley with Donald Ross (right), who received the 1984 International Recognition Award from the Denton A. Cooley Cardiovascular Surgical Society in London.

other transplant surgeons, that these operations should be halted until the problem of rejection was resolved.

Throughout his life, he made numerous contributions to the medical literature: his published works include the book *A Surgeon's Guide to Cardiac Diagnosis*, 2 co-authored books, and several hundred articles. After retiring from surgery in 1997, he remained a strong advocate for advances in surgery, particularly the development of artificial organs. He also believed in the potential of tissue engineering for solving the shortage of donor tissues. Outside his medical career, he bred Arabian horses and loved chamber music, opera, and theatre.

My friendship with Donald dates back to the early 1950s, when I served as senior surgical registrar under Brock. I remember Donald particularly for his courage in introducing innovative surgical procedures, as well as for the interest that he took in mentoring others—

often traveling widely to instruct rising young cardiac surgeons. Truly, he saved many lives beyond those of the patients he personally treated. In 1984, the Denton A. Cooley Cardiovascular Surgical Society awarded him its highest honor, the International Recognition Award, at a symposium held in London.

Donald is survived by his wife Barbara, his daughter Janet, his grandchildren John-Ross and Ellie, and his sister Ellie. I extend my deepest sympathies to his family, friends, and colleagues. Donald's courageous and pioneering spirit will live on through those whom he mentored and inspired.

*Denton A. Cooley, MD,
President Emeritus,
Texas Heart Institute,
Houston*