

Hall of Fame

The Paediatric Cardiology Hall of Fame – Donald Nixon Ross

Jane Somerville^{1,2}

¹*Imperial College London, London, United Kingdom;* ²*Steering Committee of The World Congress of Paediatric Cardiology and Cardiac Surgery*

Abstract Donald Nixon Ross, FRCS (4 October 1922 to 7 July 2014) was a South African-born British cardiothoracic surgeon, who developed the pulmonary autograft, known as the Ross procedure, for the treatment of aortic valve disease, and also performed the first heart transplant in the United Kingdom in 1968. This paper, written by Jane Somerville, Professor of Cardiology [Retired], Imperial College London, London, United Kingdom, provides the personal recollections about Donald Ross from Jane Somerville, and thus provides a unique snapshot of cardiac surgical history.

Keywords: Ross procedure; pulmonary autograft; homograft; cardiac transplantation; surgical history; Donald Ross

Received: 19 January 2015; Accepted: 15 February 2015; First published online: 16 July 2015

I SUSPECT IT IS AN HONOUR TO BE ASKED BY THE Editor-in-Chief to write some reflections on my old friend Donald Ross. Although I do not think it is a privilege to have to look back, I accepted because the Editor-in-Chief is one of the few in the medical literature, over 50 years, who likes my ideas and does not quibble too much with the liberties I take with the English language and my strange thoughts that do not follow everybody else's. The reader may question why a non-surgeon, indeed a committed physician, has been asked to write about one of the world's greatest cardiac surgeons, so, first, I must explain my position in the Donald Ross story.

I know Donald Ross as well as anybody and better than most, with the exception of his family. I became his colleague, knew most of what he was thinking and going to do, at least in surgery, and was privileged to be part of the many successful advances he made in cardiac surgery for congenital heart disease. Parallel and deeply intertwined with our professional

relationship were our family relations. I met Donald Ross for the first time when I was a dresser* in the firm of Sir Russell Brock in 1954. Donald Ross, at the time, was the surgical research fellow. At that time, I had an intense desire to become a cardiac surgeon because I had heard Alfred Blalock give the Carbutt Memorial Lecture in Guy's Hospital earlier in my student career; and thus, I became entranced, if not actually mesmerised, by congenital heart disease as well as by cardiac surgery. Later, I was to become the menial House Surgeon in Brock's firm, walking sedately at the back of a long line of adoring attendants with Donald Ross at the front, now the Senior Registrar. These were heady days in 1956. Cardiac surgery was primitive, and cardiac surgeons were God-like and ruled all decisions. Donald Ross appeared to me a good friend; he was quiet spoken, thoughtful, and fished me out of regular trouble. Thus, began a friendship, which ended on 7 July 2014.

*"Dresser" is the term used in Guys hospital when a medical student was attached to a surgical firm for three months. The term "dresser" was used (since the 18th century) because the medical student would assist nurses or surgeons with dressing of wounds, and in the process learn about wound care, and also scrub up with surgeon. Jane Somerville was on the firm of Sir Russell Brock by choice as 12th appointment of medical student training, where students were all allowed to do which firm they wanted.

Correspondence to: Professor J. Somerville, MD, FRCP, FACC, FESC, Flat 30, York House, 39 Upper Montagu Street, London W1H 1FR, United Kingdom. Tel: +44 207 724 5840; Fax: +44 207 724 5840; E-mail: somerville.jane@btinternet.com

Brock was an amazing teacher – he taught and tormented both of us, but he gave us lessons for life that have served me well as a practising cardiologist. Donald not only saved patients but also me.

The mortality of the so-called “total correction” was substantial using the Lillehei bubble oxygenator, which to me did not give them enough blood over long hours of Brock operating. I often thought it was not a blessing that the first patient lived and the next eleven died. These were really dreadful but interesting days and Donald was exceptionally supportive. We were witnessing new medicine, and his bright mind and excellent clinical ability were a constant source of information and inspiration. It was just as inspiring as our Chief’s basic principles of medical thought, which was not matched by extreme surgical and technical ability, but I believe we both learnt much. For me, it has been the bedrock of my practice of medicine.

I left, went into medicine and cardiology at The Heart Hospital, which had all the fashionable cardiologists and physicians of the day on its staff and had no cardiac surgeon, except, by name, Sir Thomas Holmes-Sellars. Indeed, we managed without cardiac surgery; I, trying to direct as many referrals to Donald as I could and as many physicians to be interested in him. All our patients were referred out to the main teaching hospitals where there was cardiac surgery. Paul Wood, who dominated the scene in the early 1960s, wanted Sir Brian Barrett-Boyes to be the surgeon at The Heart Hospital. He had discovered him in New Zealand when he was running around his native land Australia as Simms Professor. I, as a Registrar, wanted Donald Ross. I could not think of anybody better or more innovative or more interesting. Donald had already replaced the stenotic aortic valve with a homograft in 1961, when his decalcification efforts, as innovated by Brock, led to the aortic valve going down the sucker. Fortunately, his ingenuity had provided a homograft, freeze-dried, which lay sterilised in a pot above a sink in the dog lab. This heralded a whole new era of the use of the biological valve for valve replacement, beginning with the common aortic valve stenosis. Wood died, Donald Ross came on the staff at the National Heart Hospital in 1964/1965, and a whole new era began in cardiology in The Heart Hospital, which could rival the Brompton, Hammersmith, and the Middlesex Hospital, where the technical geniuses of Sir Thomas Holmes-Sellars practised cardiac surgery with minimal mortality and morbidity and also the right diagnosis, something neither Ross nor Brock were used to in Guy’s Hospital. It is no wonder that Donald was an excellent cardiologist and clinician.

I remember one of the first social occasions that we shared was in Froggnal (an area of Hampstead, North

West London in the London Borough of Camden) to celebrate the christening of his only child, Janet. It was a magnificent sunny day. My husband Walter was to be the godfather, and there were rivers of vintage champagne; those really were the days, and I can remember it clearly. It was a great occasion! We celebrated together many christenings and the Ross family have a Godchild in Crispin, my youngest. We not only celebrated christenings, but Christmas where we always had lunch with them eating caviar and more goodies ... You can imagine, then turkey at night, considerably later with Donald carving. Donald was an awful carver, you cannot believe it. It was as if he would carve the turkey into six pieces, and then six people were served when it was really sixteen, and then he would laugh and sit down. For that reason, we had two turkeys. His carving improved, as he was rivalling Walter who was slow but very methodical. We had so many meals together and much good drink. He and Walter shared many things – a love for poetry, as well as an interest in music and the arts and politics.

Our Sunday lunches often ended with Donald singing “Jesus loves me, this I know”, and on one occasion one of the boys piped up saying “But how do you know that, Donald”, and the next line “Because the Bible tells me so”. This remarkable rendition would be often followed by Walter and Donald dancing the Shoeshine Shuffle to the song of “Tiptoe through the Tulips”, while the family ate vast quantities of food and usually took no notice unless the singing became too raucous. By then, coffee would be served and Donald would take a cigar from his pocket and another for Walter who usually did not smoke it. Drinking a double brandy and inhaling cigar deeply often led to near syncope in Donald. Walter would drag him off to bed and then would lie down beside him. I protested as there were inevitable domestic matters that required his attention, asking him why he did this, and he would say “Donald looked so ill I thought he needed a doctor”. Such was the madness of those days.

In 1965, soon after Donald came, a young man presented with classic pulmonary valvar atresia, a large ventricular septal defect, and a full set of pulmonary arteries, which we were later to learn was very uncommon, with large congenital systemic collaterals from a right aortic arch. I referred the patient to Donald, and Donald told me he had a good operation for that but did not quite explain what it was. Physicians in those days were not allowed to know, and consent was scanty in information, to put it at its best. In 1966, at The Heart Hospital, Donald placed the first right ventricular outflow tract homograft valve. The patient’s operation was a huge success, although we had terrible post-operative

problems for three months in the intensive care unit, related to collaterals, which could not be closed or found at thoracotomy, and were not fully understood. The patient is alive today with a family of his own! It was only 30 years later that I learnt that the reason Donald wanted to put a homograft in the right ventricular outflow tract was that he had already designed the pulmonary autograft operation – the so-called Ross operation – but he was not quite sure what would happen if he took out the patient's pulmonary valve for use as an aortic valve replacement. He was not attracted to leaving gross pulmonary regurgitation and no valve. What an extraordinary visionary he was! The autograft was to come in 1967, first in a modified form in Guy's Hospital, and then, in a classic form, with a series in The National Heart Hospital, beginning in 1968, and I looked after these patients.

Donald was referred many cases of severe aortic stenosis because of his successful work with the aortic homograft initiated in Guy's Hospital. There were many tough cases with severe left ventricular hypertrophy. These cases are exceptional to see now, as usually they are picked up and operated on well before the development of such severe left ventricular hypertrophy. There were some extraordinary adventures with these patients, and I was fortunate to be a part of them.

I remember when the first pulmonary autograft was performed. I was standing in the intensive care with Derek Gibson and the patient came back. There was rather a garbled account from the nurse as to what had been done, although, as it happened, it was correct. Derek came forward to explain that Donald had taken out the patient's own pulmonary valve and used it to replace the excised diseased aortic valve. Of course, there had been no discussion, there was no ethics committee, there was no anything like that, and as a physician I felt privileged to get the patient back alive. The patient actually did very well. After that, there was a series of these patients, with a few mishaps. These mishaps have been written about in the surgical literature, including the danger to the coronary arteries and difficulty in getting the patients off cardiopulmonary bypass. Indeed, it was this problem, when there had not been adequate myocardial perfusion; thanks to Denton Cooley, who did not seem very interested because of course he was a very fast surgeon. Other surgeons could not do the operations as quickly, but did try. We had "stone hearts" from inadequate or no myocardial protection over a long period, a most frightening experience.

I remember the night of one of these stone hearts in a young man. When I called up to find out what was going on in the theatre before going home, Donald said "Oh, we can't get the patient off bypass so we're

going to try pigs' hearts". I couldn't resist staying, and two squealing piglets were later let out of a sack in the mews. The head porter stayed to try and catch them in the mews. Unfortunately, with all the squeaking and squealing and laughter, the Matron was aroused from her deep slumber and reported Donald to the Senior Physician – Graham Hayward. Such things happened in those days. Donald was told he could not go on operating, and it MUST be stopped and some explanation must be given of this matter, as well as an apology to the matron. The annoyance had been compounded by sending the matron pork chops for her lunch. Donald took no notice of this diktat, although worse was soon to come. The need for transplantation was extreme, and that year, following Chris Barnard, his friend's example, Donald performed the first transplant in the United Kingdom on Fred West. It was an amazing night to be associated with the cardiac surgeons. It was so exciting; new excitement, a new era in fact. We could not believe it when the house governor, who was very supportive of these adventures and of Donald Ross in particular, asked us if we would go outside as a team and present ourselves as he did not want to let the press into the small hospital (how right he was!). We did not know how to handle the press. We had enormous trouble from the press, as did the transplant donors and recipients. In fact, the press managed to stop transplantation for a while, which was sad because they behaved so badly. Donald Ross dealt with this by getting his own press agent, a very good publicist for Donald and others called John Gorst, to become an MP and ultimately knighted – Sir John Gorst – and this strategy was extremely useful for the future. It is interesting that the transplant photograph of us outside was the one to appear in Donald's obituary in the London Times.

Donald could run a team with his charisma and clear thoughts. He was a real team player and a good team leader. Donald was much respected at all levels. Indeed, he became a much admired figure by his surgical colleagues as well as many others. He loved fun, he loved parties, he loved drinking, he had an extraordinary interest in life, and as a great doctor and technical surgeon he had much to offer. He always reported his results honestly, to the best of my knowledge, and he encouraged me, in my obsessive attitude, to follow-up to know what happened to these various biological valves in patients.

Donald and I had one or two major quarrels as colleagues. These quarrels rather interrupted my professional life, but certainly not his, as Donald did not like confrontation of any sort, whether in his personal relations or in his professional relations. Some of our quarrels were over the fascia lata when that was popular in the early 1970s for making

valves. The fascia lata behaved so badly in the right ventricular outflow tract that I begged him not to use it, as it was clearly shrinking and stenosing very quickly. Donald was much encouraged in his work by his friend Marian Ionescu, a flamboyant Romanian surgeon with a lot of innovative ideas. My concerns were completely ignored during that period. Donald supported me very much for my appointment as Full Consultant, as before this I was a Second-Class Consultant as a Senior Lecturer. When I got on the staff at The National Heart Hospital as a Consultant for congenital heart disease, Donald presented me with my golden stethoscope, which was round my neck for the next 45 years until it was stolen.

Donald was an excellent lecturer. He was very clear in thinking and would always come if a patient was in trouble. He seemed to maintain good relationships with his surgical colleagues, although I think it was difficult for Keith Ross of the same name who was to become a Baronet. Magdi Yacoub and Donald seemed to cohabit very well, although no doubt the spirit of rivalry was great. Indeed, Magdi could do the operations that Donald conceived and practised extremely well, and I thought sometimes better!

Donald led his surgical team well. His strength of character maintained cardiac surgery in The Heart Hospital when the Institute of Cardiology took it upon themselves, under the leadership of Wallace Bridgen and Aubrey Leatham, to suggest that surgery was not properly led. Through the decades, it was clear that Donald was not a hands-on father (nor was Walter!!!), another trait they shared. Out in Spain, where we both had holiday homes, Donald was unwise enough to be persuaded by two of my sons to take them out on a pedalo (paddle boat). The journey was a disaster! They came back and Donald was white in the face, saying there had been a mutiny on board and the boys were stoning him. There was a slight breakdown in relationships over that holiday, but of course Walter and Donald continued to drink and discuss politics together. The boys, noticing the absence of childcare skills, had indeed organised a mutiny on the pedalo. There were ups and downs, both medically and socially, but never for very long; however, I decided not to work with him for three years when he would not support me over an anaesthetist who was really dangerous with children.

Donald had a capacity for friendship. Women of all sorts flocked about, loving him. Donald basked in the glow of their admiration. He had a few strong men friends, and he liked rather peculiar people: arms dealers, car dealers, odd owners of odd things, and racing people, since he loved Arabian horses. Donald appreciated the high intelligence in men, and he and Walter shared a rather black humour, as well

as a love for literature. He was an interesting mixture of frugal, humble, Scottish background, and great generosity, often unexpected. Donald was very kind and sometimes worried about people, surprisingly. I remember one home lunch. Donald arrived back with a smart Gucci tie that he had bought himself. One of my sons admired it deeply, and at the end of the lunch, Donald took it off and gave it to my son. To this day, the Gucci tie is in my son's wardrobe.

Donald adored travelling, and he loved the attention and affection that he rightly received. This admiration never seemed to go to his head. He acquired odd friends and beliefs, and had a long association with Sai Baba who I thought was highly suspect. Donald was often missing at lunchtime when one was desperate to find him, and he would either return from a long lunch in Marylebone High Street or with a Lowry picture long before anybody had heard of Lowry. Throughout the years I have known Donald, he had an extraordinary ability to communicate with everybody. Not only did he befriend these strange people, he was just as likely to take the view of the cleaning lady as he was from a colleague about a national event or something of concern. Donald had no snobbishness and never courted the establishment nor showed the slightest interest in doing so. He really enjoyed the admiring clack around him and the fast cars. Donald really did want harmony, and he did not want to engage in any dispute – a bad man to have as an ally if there was a potential battle. He would, however, fight the physicians of The Heart Hospital very vigorously when they were critical of his contribution and his research and his academic involvement. I never felt he took himself very seriously, and his laughter about naive things and people was most genuine. Nonetheless, it was clear that he was a man always in control of his own destiny. He was deeply ambitious and a loner. The charm and the laughter did reflect how he felt, but it was not close to his inner self.

Donald was a man present at the privileged time in cardiac surgery. He could not do now what he did then, because the current environment is limited by too many ethics committees and interruption of forward thinking. Donald definitely could organise, run, and lead a team, something that his mentor Russell Brock was unable to even consider. Indeed neither did the rest of the surgeons of those days.

It has often been discussed why Donald was not knighted. Of course no one knows the answers to this query, and even those who did, would not say. I think it was related to one or two factors

- First, Donald did not play with the establishment or worry about them. Part of that establishment is

the Royal College of Surgeons, with whom Donald had little or nothing to do with.

- Second, I think there was a lot of jealousy around because Donald established private practice, which was difficult in the early 1970s; however, Donald managed it and had a very successful service in The Harley Street Clinic. Of course patients flocked from every part of the world to be operated on by him, not only for his excellent results, but because he handled the diseased with great ability. Nothing incites more jealousy than a large private practice! Donald not only gave a very good surgical

result but he gave a good medical service to the patient and looked after them in intensive care, which is so necessary, and in the wards.

Donald's daughter Janet, a successful dermatological surgeon, says with outstretched hands "I have 50% of his genes and that's enough for me". I believe it is enough for us to have known Donald well and to have benefitted from his good example in teaching, innovation, and care of patients. Thanks to Donald Ross, we have been so fortunate, as has the world of cardiac surgery in the last 50 years!