

DAVID CUMMING SIMPSON

David Cumming Simpson MBE, Emeritus Professor of Orthopaedic Bio-Engineering and former Executive Dean in the Faculty of Medicine, University of Edinburgh, died in 15th May 2006 in Edinburgh.

David was born on 24 July, 1920 at The Retreat, Dovecot Road, the Simpson family home in Corstorphine, then a village outwith the City of Edinburgh. His father James Cumming Simpson (1873-1936) was Financial Director of The Simpson Label Company, a respected Edinburgh firm of specialist printers founded in 1858 by his grandfather David Cumming Simpson, of which he was himself an active non-executive director until the company was bought by a Dutch printing firm in the 1990s. His mother was Jeanie Huchean Sim (1884-1960), a Glasgow lady and a silversmith. David had only one sibling, his elder sister.

David attended The Edinburgh Academy from 1927 until 1938 during which time the family moved to 178 Mayfield Road. The Simpsons were members of the Catholic Apostolic Church of which his grandfather was an Elder, his father a Deacon and David himself an Acolyte. Here the seeds of his Christian faith were sown which matured with the experience of life and from which his finest qualities derived.

On leaving school, Simpson spent a summer holiday in the Bavarian Alps returning by way of Munich and the Party Stadium in Nuremberg and, mistakenly, found himself in the Jewish Quarter when in Frankfurt. He was so appalled by what he saw the Nazis doing in Germany that he joined the Territorial Army (Royal Scots) as soon as he returned to Edinburgh. In October 1938 he became an apprentice chartered accountant with Messrs Graham Smart & Annan of Edinburgh. Before he sat his first professional examinations, however, he was called up for military service in August 1939 and served with the 5th Battalion Highland Light Infantry as a commissioned soldier until invalided out of the Army in October 1945. It was with the HLI that, having endured the water-logged trenches in the Walcheren campaign, he was wounded on 26th March 1945 near the Rhine. Shrapnel from an 88mm shell damaged his brachial plexus leaving him a legacy of chronic pain and, for some time, loss of use of his right arm. It was characteristic of David Simpson that, as an act of reconciliation, he sent Easter flowers each year to the Evangelische Kirke in Hamminkeln, the church in the little town where he was wounded.

Simpson had not liked accountancy and in October 1945 started an honours physics course at Edinburgh University. Disablement and poor health made difficult his undergraduate years. The prognosis was discouraging and he learned to write with his left hand. Perhaps he was encouraged by the recollection that his successful Simpson grandfather had lost a leg when run over by a cart as a boy. He found release in mad-hat, one-handed drives down the A1 to London. It was on one of these in June 1946 that he had what he called "his road to Damascus experience" when he realized that he really wanted to marry the sister of an old school friend. Isobel Jean Ross-Smith (1823-1996) had trained in domestic science at Athol Crescent and was teaching the subject in Darlington, so to Darlington he drove, proposed, was accepted and they were married later the same year. He was fond of saying that it was "Isobel who put me on my feet again" and he remained devoted to her. Simpson was fortunate that J R Learmonth (later Sir James), a world authority on peripheral nerve injuries, was then Professor of Clinical Surgery at Edinburgh and in three operations from 1947 restored considerable function to Simpson's right arm. Simpson completed his undergraduate course in 1949 and, despite the fact that his first child Allen was born on the day of his third year Heat and Thermodynamics examination, he graduated B.Sc (Hons). His daughters Joan and Mary completed the family.

Several jobs offered to him on graduation were in armaments and not acceptable to Simpson. He was fortunate, therefore, to get a Medical Research Council grant to do a Ph.D. In 1951 he was asked by the Department of Surgery to design and construct a multi-channel recording machine for use in the operating theatre similar to one seen in the Mayo clinic by Professor Learmonth. Through the good offices of Dr J M M Johnstone, the Scottish Hospital Endowment Research Trust gave Simpson £1000 to buy materials for the project and the MRC paid for a technician. He submitted his thesis "The development of a method of following changes in the radio-opacity of the small bones of the hand" and graduated Ph.D in 1952. Because of Learmonth, he joined the Department of Surgery at Edinburgh University as a member of the external staff of the MRC to work on problems of instrumentation in the operating theatre. His monitoring equipment supported pioneering work in transplant surgery at the Royal Infirmary of Edinburgh and Western General Hospital. He also developed one of the first successful foetal heart monitors for clinical work at the Simpson Memorial Maternity Hospital. His career as a medical physicist was now opening to him and his theoretical knowledge and natural dexterity made it a very suitable job for him. In 1953 he was diagnosed with tuberculosis which was successfully treated by Sir John Crofton with streptomycin. Simpson often said how fortunate he was that penicillin had been introduced just in time to save his life after his war-wound and streptomycin just in time to save him from tuberculosis.

In 1955 the Medical Physics Unit was formed in Edinburgh and Simpson was involved in the design and implementation of a wide variety of instruments for departments of the University and the NHS. In 1956 he

was appointed lecturer in Medical Physics. He was asked by Dr Sandy Wilson of the Scottish Home and Health Department if he would take responsibility for the design and supply of upper limb prostheses for thalidomide children. He welcomed the opportunity to concentrate on one project of research, design, development and clinical trial on an immediate basis but this had to be done in an atmosphere of emotions, politics, and intense media interest. He visited Ernst Marquardt in Heidelberg who, since the 1950s, had been building and fitting pneumatic Carbon Dioxide powered limbs to adults; a visit which resulted in the setting up of the Edinburgh Powered Prosthetic Unit on 4th May 1963 and his appointment as its Technical Director and Senior Lecturer in 1964. In 1967 he became Director of the Orthopaedic Bio-Engineering Unit at the Princess Margaret Rose Orthopaedic Hospital and Honorary Director MRC Unit for Physical Aids for the Disabled at the same hospital.

The stage was set for Simpson's master work. He recognized that however cleverly designed and miniaturised new powered arms for children might be, they were of little use if the arms could not be controlled. If the prostheses were to be used in a controlled and coordinated way they needed feedback. By a clever analysis of arm movement, Simpson chose an appropriate polar co-ordinate scheme which effectively treated the arm as a lever which radiated from the child's shoulder joint. He provided feedback to the children by linking their intact shoulder movements to the prosthetic joint movements by simple cables. Thus their residual shoulder joints received feedback about position, force and acceleration. As David Gow has written "children could learn to control up to five movements on the Edinburgh arms and become proficient in half a day. No other system in the world to this day has managed to achieve this." Thus Simpson propounded the idea of Extended Physiological Proprioception ("The Choice of Control System for the Multi Movement Prosthesis: Extended Physiological Proprioception (EPP)" Chapter 15, pp.146-150 in *The Control of Upper Extremity Prostheses and Orthoses* Ed. P. Herberts et al 1974). He was made Reader in Medical Physics in 1968 and appointed to a Personal Chair of Orthopaedic Bio-Engineering in 1972.

Simpson visited clinical centres around the world telling of the work done by his Edinburgh unit and learning of bio-engineering advances made elsewhere. As the value of his work became recognized honours came his way. He was appointed MBE in 1966 and received the S G Brown Medal and Award from the Royal Society of London in 1970. He was elected Fellow of the Royal Society of Edinburgh in 1967 and among the many other learned bodies of which he was a member may be mentioned The Biological Engineering Society (President 1973-5), now subsumed in The Institute of Physics and Engineering in Medicine, The International Federation for Medical and Biological Engineering of which he was a Council Member and awarded Honorary Life Membership in 1988, and he was an Honorary Member of Arbeitskreis für biophysikalische Prothetik.

Simpson changed his career in 1976 when he was appointed Executive Dean in the Faculty of Medicine in Edinburgh University; a post which suited him well and in which he proved himself a wise and capable administrator until his retirement in 1980 when the University honoured him by making him Professor Emeritus. After his retirement he was made an Honorary Fellow of the Royal College of Physicians of Edinburgh (1997) which kept him in touch with his many medical friends and gave him much happiness.

He listed as his outside interests old maps, topographical prints, antiquarian books on Edinburgh, publishing, typography and book illustrations. To this should be added horticulture in which he shared his wife's keen interest. His expert knowledge of Edinburgh and its topography found expression in the magisterial folio of facsimiles of plans of the City published as *Edinburgh Displayed* in 1962. He was also well qualified to assist as a member of the Committee of the Royal Scottish Geographical Society responsible for compiling and producing the 2 volume work *Early Maps of Scotland* published in 1873 and 1983. He served on the Council of that Society on a number of occasions between 1967 and 1992 and was a member of its Library Committee from 1967 to 1992 (Convener 1974-1980).

Isobel's death in 1996 was a bitter blow to Simpson. Together they had raised a closely knit family and his three children and their families gave him the support he needed. His war memories remained with him "restless and unquiet" and, in his eighties, he found catharsis by committing them to paper as poetry. Some of these were published in 2001 as *Interesting Times* and their vividness and simplicity touched people of all ages. A larger collection *Private World* was published in 2005 by the ex-service welfare charity Combat Stress.

David Simpson respected people of whatever class or culture and, although a man of strong convictions -he was a thorn in the flesh of authorities who indulged in practices of which he disapproved- he was tolerant and gracious to all. When he saw a need his instinct was to provide the means to put it right and his many acts of quiet generosity are known only to the recipients. On seeing the bare walls of the enlarged premises of the Royal Society of Edinburgh in 2000 he clothed them with the outright gift of forty framed botanical prints and the loan of thirty-three pictures and prints. To these were added the loan of twenty framed Slezer prints which give character to the Fellows Room. For this the Society remains deeply grateful.

David gave me a copy of his poem *Ecce Homo, The bravest man* which has the lines “Slowly, quietly, day by day, step by step, he went to death” and when it came to his own time to die of cancer he did so with a bravery and dignity which his friends will never forget. He was interred at Mortonhall Cemetery.

I am grateful to Dr Allen Simpson for his help and for access to his father’s autobiographical writings. Dr Tam Dalyell, Dr David C Gow, Dr J S Milne, Lieutenant Colonel Ian Shepherd and Canon Norman Wickham have made this notice possible by kindly allowing me to quote from their own published and unpublished obituaries of Professor Simpson.

Charles D. Waterston

David Cumming Simpson MBE, B.Sc, Ph.D(Edinburgh), FRCPE, FIDSPO,FRSG. Born 24 July, 1920, elected FRSE 6 March 1967, died 15th May 2006.