



Scots who made their mark on..... *Medicine 6: Donald and Black*



Prof Ian
Donald



G.B. 1994



(1910—1987)



(1924—2010)

Sir James Whyte
Black



G.B. 2010

Today **ultrasonography** is used routinely to visualise body parts like tendons, muscles and internal organs. The technology was first developed in the USA in the 1940's, refined further in Sweden in the next decade using approaches first created for the shipping industry to spot flaws in construction materials and almost simultaneously at the Royal Maternity Hospital in Glasgow, where a team led by obstetrician Professor Ian Donald began to use it for diagnosis.

Before his family moved to South Africa, Ian Donald was educated at Warriston School in Moffat and then at Fettes College, Edinburgh. After taking his first degree in Cape Town he studied medicine at the University of London and gained his MB BS in 1937. For four years from 1942 he was a medical officer in the RAF Volunteer Reserve and won the MBE for rescuing airmen from a burning aircraft.

In the early 1950s he was Reader in Obstetrics and Gynaecology at St Thomas Hospital Medical School and in 1954 he became Regius Professor of Midwifery at the University of Glasgow. Here his



Ian Donald with the NE 2102

"rudimentary knowledge" of radar gained from his RAF service and his love of technology inspired him to dabble with other aspects of echo-sounding and their possible application to medical research, which in due course led to his development of ultrasonography.

In addition to his expert researches he was greatly appreciated as an enthusiastic teacher and caring doctor. He wrote the definitive and lucid text *Practical Obstetric Problems* and the more personal and wryly amusing paper *On the Receiving End* following three cardiac surgeries. He was vigorously opposed to the terms of the 1967 Abortion Act which legalised abortions up to 28 weeks gestation and made such freely available through the NHS. Professor Donald felt that this Act famously promoted by David Steele MP was an "attempt to eliminate an evil by substituting a different evil"

His article *Investigation of Abdominal Masses by Pulsed Ultrasound*, published June 7, 1958 in *The Lancet*, was one of the defining publications in the field.

We learn from the Presentation Pack for the 2010 GB Medical Breakthrough issue written by Dr Richard Barnett that "the first beta blocker, synthesised by (this) Nobel Prize winning Scottish physician in 1962 was **propranolol**—a drug which revolutionised the treatment of angina and high blood pressure.

"The intense crushing chest pain of angina is caused by narrowing of the vessels which carry blood to the heart. During stress or exercise the heart muscle is stimulated by the "fight or flight" hormone adrenaline but the narrowed blood vessels cannot supply enough oxygen to meet this increased demand.

"By the 1950s researchers realised released that the pain of angina could be reduced if a drug could be made to block the action of adrenaline on beta receptors in the heart—hence "beta blockers".

"Black, then working as a research pharmacologist for ICI Pharmaceuticals, began to synthesise compounds that fitted the molecular structure of the beta receptor....His highly original research has inspired others to develop specifically targeted drugs..."

Sir James Black was born in Uddingston into a family of modest means and educated at Beath High School, Cowdenbeath, winning a scholarship to study at the University College (Dundee) of St Andrews University to study medicine when aged only 15, being encouraged by a Maths teachers to sit the entrance exam. Black progressed to lecturing at St Andrews before teaching in Malaya. On his return to Scotland in 1950 he moved to the University of Glasgow (Veterinary School) and established its physiology department, where he first became interested in the effects of adrenaline on the heart, before moving to work for ICI in 1958. Here he initiated designer drugs, in a revolutionary approach.

Black served as Chancellor of the University of Dundee (1992—2006) and his other honours included being created OM and FRS. He was knighted in 1981 and awarded a share of the Nobel Prize for medicine in 1988, for development of drugs like propranolol and cimetidine.

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