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Dr Martin Wright

By John Garrow

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Anyone who has ever been invited to "blow through this" - whether by a doctor, or by a traffic policeman - will probably have encountered an instrument developed by Martin Wright. These were characteristically simple, compact pieces of precision engineering that have become design classics in the medical world. Asthmatics, the terminally ill, and premature babies are the primary beneficiaries of his medical inventions; but he also made an important contribution to road safety in developing the most commonly used roadside breathalyser.

He was born in 1912, the second son of a clergyman, and educated at Winchester and Trinity College, Cambridge. He graduated from Cambridge with a first class degree in Physiology, did his clinical training at St Bartholomew's Hospital, and graduated in medicine in 1938. In 1942 he enlisted in the Royal Army Medical Corps as a pathologist, to research on the physiological effects of tank warfare. He rose to the rank of colonel by the end of the Second World War, while reconstructing medical laboratory services in Singapore. These experiences, requiring maximum improvisation with minimum equipment gave him his first opportunity to develop his natural flair for engineering.

After the war the Medical Research Council (MRC) was increasingly concerned with environmental causes of disease. Aneurin Bevan was brought up in a Welsh mining community where men in their forties were made respiratory cripples by the miners' disease pneumoconiosis. Bevan was easily persuaded that a Health Service that prevented such diseases would fund itself by the increased productivity. In this political climate a well-endowed unit was set up at Llandough in South Wales which brought together a wide range of scientific disciplines - physiology, epidemiology, respiratory medicine and what we now know as occupational medicine - in the study of this then mysterious disease. The staff included a number of future stars of medical research, such as Charles Fletcher, Archie Cochrane and Heinz Wolff.

This new unit was an ideal place for Martin Wright and he joined initially as a pathologist. New purpose-built equipment was needed and Wright took the lead in this. He first concentrated on machines for his own research to produce experimental dust conditions, but before long he was serving the whole unit. Progress in the study of pneumoconiosis was seriously handicapped by the lack of a simple measure of lung function. This led him to develop his most important instrument, the Peak Flow Meter.

First developed in 1956, peak flow rapidly became the standard measure in the assessment of asthma and bronchitis. The "mini" peak flow, developed in the 1970s, can now be found in every medical bag and consulting room as well as the homes of many asthmatics. Seven million Peak Flow Meters have been sold since production began.

In 1957 Wright moved to the National Institute for Medical Research at Mill Hill in north London to work solely on instrument development. This was the era in which integrated circuitry was seen to offer unlimited opportunities in the design of medical instruments. However electronics had its limitations in delivering robust

and reliable portable instruments. There was therefore some rivalry between the inventors who worked with microchips and batteries, and those who used devices powered by a spring and made on a watchmaker's lathe.

Wright definitely belonged to the latter party, and his ingenuity and engineering skill often enabled him to solve the problem with a simpler, cheaper instrument. For example the alcolmeter, his breathalyser developed with Lion Laboratories, won a Queen's Award for Industry and is now used on the roadside in all but one of the British police forces, as well as in 60 other countries. In 1969 he moved to the newly opened MRC Clinical Research Centre, at Northwick Park Hospital in Harrow.

His laboratory was on the same corridor as mine, and his door was always open to visitors. His attitude to clinicians was one of genial cynicism: he was always willing to help, but had no expectation that they would understand how his devices should be used. He told me that the ideal medical instrument was in a strong, sealed box, with just an on/off switch and a window which showed green if the test was satisfactory, and red if it was not. It should need no adjustment, and certainly not have a flickering meter needle, as then clinicians would complain that the instrument was unstable.

True to these principles he produced a series of simple sturdy solutions for specific practical problems which went on to have much wider applications. He originally developed a pocket-sized portable syringe driver to allow children with thalassaemia to receive continuous controlled injections of life-preserving drugs while going about their daily life. It is now widely used in neonatal intensive care units.

In hospices the Syringe Driver is an invaluable tool in the management of terminally ill patients, delivering continuous infusions of pain killers and sedatives for the maximum comfort of the patient with minimum intervention from health professionals. Wright himself benefited from his own invention during the last week of his life.

He had a constant stream of ideas for new devices, and re-engineered others so that they became clinician-proof. Not all ended up in commercial production, but his strike rate was high and spanned many disciplines. In anaesthetics the Wright Respirometer is an essential tool for assessing breathing during operations and his cleverly engineered version of the Random Zero Blood Pressure machine enabled epidemiologists to obtain unbiased readings of blood pressure.

Paediatricians are most familiar with his apnoea alarm, the MR10. This was developed in response to two sudden infant deaths in Northwick Park's own special care nursery and is still widely used for monitoring babies born premature or at risk of cot death. He also made, and used himself, spectacles with which the wearer could alter at will the focal length of the lenses, although these were never commercially produced.

For someone whose work had such a wide impact, he was markedly lacking in personal ambition. He cared little about either financial gain or professional advancement, he had no postgraduate qualifications and avoided committee and administrative work. The MRC held all the patents on his inventions, so he received almost none of the royalties from them. But he was more than happy to receive a steady income for doing what he most enjoyed. He worked on well into his seventies when he was made an honorary fellow of the Royal College of Physicians and a Cambridge DM in recognition of his original scientific papers.

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