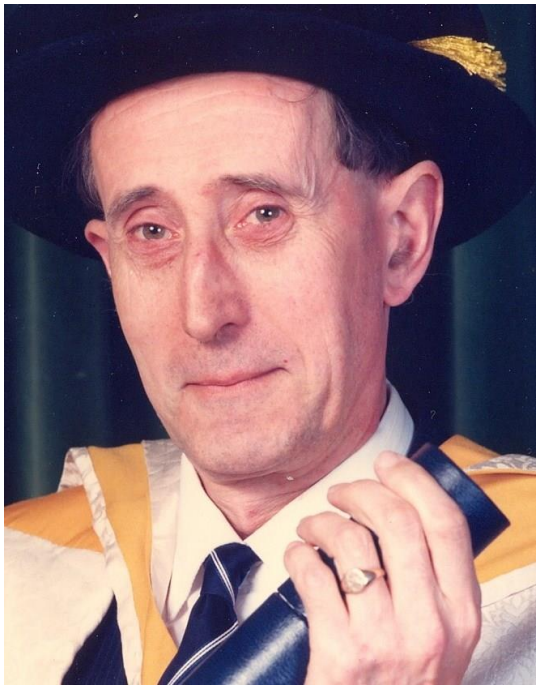
Basil John Northover (1936-2020)

As former students, we write in tribute to Professor Basil Northover who died on 14th September 2020.



Basil was born on 7th July 1936 in Northampton where his father was a pharmacist. At Northampton Grammar School his boyhood ambition was to read biochemistry at Cambridge with the aim of studying estuarine creatures and their ability to cope with alternating salt and freshwater environments. However, he went to the School of Pharmacy, University of London ("The Square") in 1954 where he found a new, and arguably more challenging, biological interest in tuberculosis and leprosy.

He was undoubtedly inspired by the vivacious and charismatic Professor Gladwin Buttle. Buttle had come from the Wellcome Physiological Laboratories in 1945 to head the pharmacology department at The Square; his scientific record in antibacterial chemotherapy is described elsewhere (1). Following Gaddum, Buttle fostered an environment at The Square that has been described as a "powerhouse" for pharmacology, staffed by, and training, some of the UK's great names in the discipline during the post-War period: Geoff West, Bill Bowman, Alan Cuthbert, Brian Callingham, Mike Rand, Jim Parratt and others. Basil knew and was influenced by these as teachers or contemporary students. After the BPharm degree, Basil worked for the MPharm (in those days, a postgraduate research degree rather than today's integrated Master's), studying the mechanism by which invading bacteria are killed by white blood cells.

Basil was advised by the renowned leprologist Dr Robert Cochrane to study *Mycobacterium leprae* where the disease was endemic. He suggested that Basil and Ann, newly married in August 1958, should offer their services as pharmacists to the Christian Medical College and Hospital in Vellore, South India, and see what transpired for opportunities to study leprosy there. They docked in Bombay in January 1959. However, soon after their arrival in Vellore it was clear that Basil would do better teaching pharmacology to the medical students than being a pharmacist. It also became clear that leprosy was not a very practicable research option, so he decided to look at other aspects of infection.

During five years in Vellore, Basil undertook research on infection and inflammation, squeezed around the series of lectures and practical classes in pharmacology that he delivered to the College's medical and pharmacy students. Basil's earliest series of research publications originates from his time in Vellore, including a communication to *Nature* in 1961 on serum protein charge and leucocytic phagocytosis of bacteria (2). The published work from this time reveals the beginnings of Basil's scientific journey and interests, from infection to vascular biology. It also displays the hallmarks of a young scientist with a meticulous sense of experimental design, considerable technical agility, keen attention to precision in writing, and the niceties of English use.

Returning to the UK in 1964, Basil was appointed to assist Buttle with his research for a year at The Square (by then relocated from the Pharmaceutical Society's house in Bloomsbury Square to new premises in Brunswick Square). During this period, Basil was able to submit the research he had undertaken in Vellore for the University of London PhD. In 1965, he was appointed Senior Lecturer in Pharmacology at the School of Pharmacy at Leicester College of Advanced Technology (later Leicester Polytechnic and now De Montfort University). Basil spent the rest of his professional career in Leicester, being appointed Chair of Pharmacology in 1989 and retiring in 1996.

In Leicester, Basil's influence as an educator was profound. His primary focus was on pharmacy undergraduate students but he also taught modules in biochemistry to other undergraduates and designed a Master's programme in Therapeutics for hospital pharmacists, one of the first such programmes in the UK. He supervised around 20 postgraduate research students of which we are his last two. His expertise as an educator was eclectic: heart and circulation, the kidney, endocrinology. He gave extra-mural lectures to pharmacists on various aspects of physiology, pharmacology and therapeutics, and pathology. Although not an author of a door-stopping textbook, Basil's monograph on electrophysiology (3) is a most scholarly introduction to a topic that many students find terrifying, even at the most basic stages. True to Basil's own scientific character, the text is simultaneously uncompromising in its rigour and sympathetic to the uninitiated.

As a researcher, Basil was uniquely gifted. Anyone reviewing his published outputs over forty years will be struck by the remarkable number of single-author, yet weighty and technically advanced, papers. At heart, he was a single-handed experimentalist who devoted many hours every day to designing and performing experiments, and then analysing and interpreting data. Those of us fortunate to have witnessed his experimental skills first-hand can speak of someone who began work in the laboratory at 7.30 am every day, before a busy schedule of teaching and administration began. For many years, Ann was present frequently in the laboratory, assisting him with histological and other techniques for assessment of vascular function and inflammation which continued to be an absorbing interest for the rest of his scientific career. Many of his most significant papers in inflammation and vasoactive chemical mediators of inflammation were co-authored with Ann over nearly three decades (e.g. 4-6). In the early 1980s, Basil's scientific interest expanded to include myocardium, particularly in the context of ischaemic heart disease. He published a number of beautifully-designed laboratory studies on the electrical activity of myocardium relevant to arrhythmias especially in ischaemia (e.g. 7-10) and was a member of the international consortium that produced the influential "Lambeth Conventions" in 1988 (11).

In the evenings and at weekends, after long hours in the university, Basil studied patients in coronary care or with thyroid disease in the adjacent Leicester Royal Infirmary. His ability to connect with the leading cardiologists, endocrinologists and clinical pharmacologists in the Leicester Royal Infirmary at that time (John Swales, Herbert Thurston, Anthony Heagerty, F David Rosenthal, John Hearnshaw, Brendon O'Malley, Kent Woods) was pivotal to the success of clinical studies using systolic time interval analysis. He performed all the measurements and analysed all the clinical data personally (12-15). His working relationship with John Hearnshaw, the senior diabetologist and consultant in general medicine was particularly significant; in the early days of Basil's clinical research many of the subjects Basil studied were admitted through Casualty when Hearnshaw's team was on take.

In 1989, the higher doctorate (DSc) was conferred on Basil for his sustained and substantial scientific contributions. Basil retired as Professor of Pharmacology in 1996, to be succeeded there by the late Mike Boarder in 1999.

After retirement, Basil spent much of his time helping his son Malcolm to restore a Georgian farmworker's house in rural Leicestershire. In 1999 Ann and Basil moved to Barnstaple, North Devon, to be close to their other children Ruth and Colin. An "active retirement" for Basil involved woodland management near Barnstaple – he and Ann had acquired woodlands in 1993 – and assisting with Colin's farm near Truro. Always a practical and manual sort, with a love of nature and the outdoors, inspired in childhood through the strong bond with his grandfather Harold, much of Basil's time was given to fencing, lambing, feeding calves, tree planting, garden and woodland management. Ann tells us that Basil spent many hours managing the woodland. This gave him great pleasure; alongside job-satisfaction, there was enjoyment of woodland wildlife.

After 2008, Basil's eyesight began to deteriorate rapidly as a result of cataract and acute angle glaucoma. Despite intervention, Basil's eyesight was not restored and he was left with "tunnel vision" in the left eye. The deterioration was so bad that forestry was too dangerous and, with additional concerns about larch *Phytophthora ramorum* disease, in 2019 the woodlands they had owned for so long were sold. Sadly, increasing infirmity led to a fall and hip fracture in August 2020 with complications that resulted in his death.

Basil was a man of strong Christian conviction. Although raised in the non-conformist Congregational tradition, Ann tells us that his experience in India marked the beginning of a "Universalist" attitude to spirituality and theology. His close scientific colleague in Vellore, Ganapathy Subramanian, was a Hindu. As young men, they had discussions on the nature of the divine being and the relationship between God/Brahma and humans. Other experiences in those early years, and subsequent life in Leicester's rich multi-faith and multi-cultural community, steered Basil's theology in an ecumenical direction.

Many who met Basil in glancing encounters may have formed the superficial impression of a rather serious and austere man. He was certainly both of these – serious in purpose and modest in personal habits to the point of austerity perhaps. However, further encounter soon revealed a man of great warmth and humanity, often displayed in the twinkling eyes of a smile and a hearty, guffawing laugh.

As a scientist and mentor, his rigour, precision and principle were evident in everything he did, from the first published *Nature* article in 1961 (2) to the last paper in 2001 (16). Although always busy, he was never sparing with his time for others when it was required. As a supervisor, he managed to balance perfectly the level of oversight required to steer a student down the right track – but with the constant encouragement of independence. We benefitted from that, both as students and later as supervisors ourselves. He provided wisdom to the tyro during an apprenticeship in science, instilling a strong sense of truth and integrity as well as a healthy scepticism and humble curiosity. His advice was "Record everything, simultaneously where possible – including where the laboratory cat was sitting; don't exclude anything!" Basil taught statistical analysis well but was not a fan of the term "outlier" and did not worship at the altar of statistics. He encouraged us to look for the big effects -- "does it pass the inter-ocular test?"

In Basil's death, pharmacology has lost an unassuming, modest and industrious example of a rigorous scientist and a gentle man. Our thoughts are with his wife Ann, his children Colin, Malcolm and Ruth, and the grandchildren.

Gary F Baxter, Cardiff University; Antony Workman, Glasgow University

We thank Ann Northover for providing biographical detail.

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