

Book of the Quarter

NOTHING VENTURE NOTHING WIN

Professor Sir Michael Woodruff, Scottish Academic Press, 1996, pp 234

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Over the past 200 years, the two senior professorial Chairs of Surgery in the University of Edinburgh have been occupied by a remarkable series of brilliant surgeons and inspiring teachers, some of whom have also been clinical scientists of the highest distinction, such as Charles Bell, James Syme, Joseph Lister, John Chiene, Alexis Thomson, Harold Stiles, David Wilkie and James Learmonth. For a ten-year period after World War II, the Chair of Systematic Surgery and the Regius Chair of Clinical Surgery were jointly held by Sir James Learmonth but, upon his retirement in 1956, the University decided to separate the two Chairs again and to redefine their academic roles. Prime responsibility for the organisation of undergraduate surgical teaching was transferred to the Regius Chair of Clinical Surgery, and the Chair of Systematic Surgery was reborn under the new designation of the Chair of Surgical Science with an implicit orientation mainly, but by no means entirely, towards research.

In his autobiography, Sir Michael Woodruff, who was appointed to this Chair in 1957, tells us that at the time he considered its new title to be ill-chosen, and he records his satisfaction at its reversion to its original designation before his retirement. This is but one of many insights into his academic and scientific philosophy afforded to us by the author of this fascinating book: Sir Michael's major contributions to biomedical science have enhanced the illustrious reputation of the Edinburgh School of Surgery and have entitled him to a fame equal to that of the most distinguished of his predecessors.

Sir Michael combines an admirably clear and pleasing prose style with a gift for narrative and for lucid exposition which have enabled him to produce an account of his remarkable career that can be read and appreciated by educated lay persons from all walks of life, as well as by members of his own profession, with the utmost interest and enjoyment.

THE STUDENT - FROM MATHEMATICS TO MEDICINE

Sir Michael was born in London in 1911 but two years later his family moved to Melbourne, Australia, where he was brought up and received his school and university education. His father, Professor Harold Woodruff, who had the somewhat unusual distinction of being both a qualified veterinarian and a qualified doctor, became Professor of Veterinary Pathology in the University of Melbourne in 1913 and was subsequently appointed Professor of Bacteriology in the same institution. Both of Sir Michael's parents were staunch Wesleyans, totally committed to the principles and practice of the Christian faith which they inculcated in their children by their example; he leaves

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us in no doubt of the magnitude of the moral sustenance and inspiration which he has derived throughout his life from his firm religious convictions. His mother died when he was aged five, but three years later his father remarried; he writes with much affection about his stepmother who, as the daughter of Professor John Glaister of the Glasgow Regius Chair of Medical Jurisprudence, was his first ever link with Scotland and with the Scottish Universities.

The young Michael Woodruff did well academically at school and showed a special flair for mathematics and physics which determined his initial choice of course when, in 1928, having won a Government scholarship, he became a student in the University of Melbourne. His aim was to take an Honours Degree in Electrical Engineering and to combine this with an Honours Degree in Mathematics, but after three years he had a complete change of heart and decided to make his career in Medicine. The fact that he was well on his way to the achievement of distinction in his combined course must have made the decision particularly difficult for him, and his account of the intellectual turmoil created by it and of the reasons which led him to make the change are of great interest. He did, however, obtain his degree in Electrical Engineering with First Class Honours before embarking on the study of Medicine which, because of his complete lack of prior training in biology, was a difficult and challenging transition.

Sir Michael devotes two chapters of his book to his school days and his University training, upon which he looks back with pleasure and with some nostalgia but never through rose-tinted spectacles, and with complete freedom from any trace of that mawkish sentimentality which so often renders such reminiscences both tedious and irritating. These recollections provide a fascinating vignette of Australian attitudes and political beliefs in the period between the two World Wars, when pride in the British Empire and loyalty to the Crown were universal emotions and republicanism was unheard of. As a student, Sir Michael participated fully in University life and his extracurricular achievements included rowing for his College, becoming President of its junior common room, and appointment as organist to its chapel. Those who are familiar only with his scientific reputation may be surprised to learn of this latter accomplishment, and that his musical abilities enabled him to take part in several series of public organ recitals.

It would seem, however, that perhaps his greatest undergraduate enthusiasm was the Student Christian Movement, the Chairman of which at the University of Melbourne was a distinguished mathematician, Dr D.K. Picken, whose theological and philosophical ideas influenced him profoundly. Mathematics, both Pure and Applied, has always had a special fascination for Sir Michael; in this chapter of his autobiography he seeks to explain the beauty of mathematics and the pleasures to be obtained from its study. The general reader not initiated in this discipline may fail to comprehend fully his enthusiasm, although Sir Michael does demonstrate clearly the importance of Applied Mathematics to the Biological Sciences.

A YOUNG SURGEON - IN CAPTIVITY

After graduation from medical school and various junior hospital appointments, Sir Michael obtained his MD degree in 1940 but, by this time, he was strongly attracted to Surgery and succeeded in passing the Primary FRCSEng Examination. World War II was now raging in Europe and North Africa and, although his religious principles inclined him towards pacifism, he could see clearly that the evil of Nazism had to be actively fought against. He volunteered for service with the Australian Army Medical Corps but his call-up was deferred until after he had completed his MS

degree in early 1941, after which he was posted to the Tenth Australian General Hospital, stationed in Malaya. Sir Michael has little to say about the disastrous defeat of the British and Commonwealth forces in Malaya by the invading Japanese, nor does he make any comments on the military circumstances leading to the British surrender of Singapore.

As a consequence of this, along with many thousands of British and Australian troops, Captain Michael Woodruff became a prisoner of war, and for three and a half years endured the humiliations, cruelties and privations of captivity in Japanese hands. These are described calmly and objectively in a chapter which is a most moving and inspiring account of what can be achieved in the face of the most grievous adversity and hardship by dedication and determination based on faith in the widest sense of that term. The astonishing life-saving achievements of surgeons such as Julian Taylor and anaesthetists such as David Middleton, working under the primitive make-shift conditions of the prison camp, are well described by Sir Michael and they excite our profoundest admiration. Equally as astonishing are his own researches at this time into the deficiency diseases caused by the miserable inadequacy of the rations issued to the prisoners by their captors. These researches and the improvised therapeutic measures based upon them which are described with characteristic modesty must have saved many lives, and this important work was ultimately embodied in a Medical Research Council report on deficiency diseases amongst prisoners of war in Japanese hands. Although heavily occupied with this work, Captain Woodruff managed during captivity to maintain his surgical interests, and it is interesting to learn that it was at this bleak time that he first began to think about the biological problems of tissue and organ transplantation. Sir Michael makes many penetrating observations on the various ways in which his fellow prisoners of war coped with the psychological stresses of their long harsh captivity, and he concludes that hope and faith were the best antidotes to the fatalism and despair which had a disastrous effect on some prisoners.

AUSTRALIA TO SHEFFIELD

Peace and repatriation in 1945 were followed by return to organised surgical training in Melbourne and, most importantly, by his engagement to Hazel Ashby, a young academic botanist from Adelaide. Their marriage, which took place a few months later, has been the mainspring of his happiness since then. Soon afterwards he had to make another important decision which determined the pattern of his future career, and it is his recollection of the financial risks associated with this that helped to inspire the title of his autobiography.

The decision in question was his application for the post of Surgical Tutor in the University of Sheffield which, somewhat to his surprise, was successful. He and his bride arrived in Sheffield in the latter part of 1946 and his description of the austerity of post-war England evokes vivid memories of how difficult everyday life was at that period. Having passed in January 1947 the Final FRCSEng Examination he was able to increase his clinical and operative responsibilities, and also to embark on his first experimental studies of the behaviour of transplanted tissue. Sheffield provided a congenial social environment for the Woodruffs but the University's research facilities at that time were less than satisfactory and, after two years, they moved to Aberdeen where Sir Michael was appointed Senior Lecturer in Surgery in Professor W.C. Wilson's department. Wilson was able to provide his new Senior Lecturer with excellent laboratory facilities and gave enthusiastic encouragement to his research in tissue and organ transplantation. W.C. Wilson's influence upon British academic surgery has

been considerably undervalued as is evident from the remarkable number of his Senior Lecturers who became Professors of Surgery, and Sir Michael's gracious appreciation of his chief's contributions is timely and appropriate.

Sir Michael's studies on the use of anti-lymphocytic serum as an immunosuppressive agent were started in Aberdeen, and this and other research projects dating from that period form the foundation of his scientific reputation. Wilson also gave him opportunities for foreign travel, and he was thus able to meet for the first time Dr Joseph Murray of Boston and other American workers in the forefront of transplantation research. Sir Michael's years in Aberdeen were a highly productive period during which he added considerably to his scientific reputation; he was now ready for the occupancy of a professorial chair, and his application for appointment to the Chair of Surgery in the University of Otago in New Zealand was successful. Dunedin, with a population of just under 100,000 inhabitants, could scarcely provide enough patients for a medical school producing 100 doctors a year, and this shortage of patients created obvious problems for the organisation of clinical teaching in surgery. For a comparatively young university, Otago had an impressive tradition of research and Sir Michael's programme of investigative work in the field of tissue and organ transplantation was warmly welcomed by interested and generally co-operative colleagues. As Sir Michael's research activities progressed, invitations to international scientific meetings increased in frequency and he often travelled to the United States and elsewhere. However, this was not allowed to interfere with his research or with his plans for the re-organisation of clinical teaching.

THE EDINBURGH CHAIR AND ORGAN TRANSPLANTATION

In 1956, as has already been described, the Chair of Surgical Science was established in Edinburgh University, carrying with it the charge of two surgical wards in the Edinburgh Royal Infirmary. Sir Michael's application for appointment to this chair was successful, and the fact that he was offered the post without being called for interview is the clearest possible indication of how his reputation had grown in the preceding few years. The University's decision to separate the two historic surgical chairs created certain demarcation problems which had to be resolved, and there were also some difficulties relating to the occupancy of laboratory space. Sir Michael describes these with complete candour but all were ultimately resolved without acrimony.

Sir Michael's success in organising his new Research Department in Edinburgh was appropriately rewarded when the Medical Research Council agreed to set up within it a research group on transplantation upon which his research interests remained primarily focused, and he gathered about him a strong research team which included several non-medical scientists. Sir Michael's exposition of the principles under which he set up his University Department in Edinburgh and organised his surgical unit in the Royal Infirmary is an admirably clear statement of strongly-held views based on wide experience which deserves close study by all doctors involved in the work of academic clinical departments.

The research programmes which were inaugurated in the new Department of Surgical Science are described in some detail and in terminology which non-medical readers might find difficult to understand, but this account paves the way admirably for the story of the first successful British renal transplant operation which was carried out by Sir Michael in the Edinburgh Royal Infirmary in 1960. This was

a transplantation of a kidney from one identical twin to the other so that there was no need for immunosuppression; renal transplantation in Britain thus got off to the best possible start and is graphically described. The advent of the effective and relatively safe immunosuppressive drug, azathioprin, made possible the inauguration of a programme of kidney transplantation from related but non-identical donors which achieved notable successes, and this was followed by the transplantation of kidneys from unrelated cadaver donors. Sir Michael was also involved in the first British lung transplantation, carried out in the Royal Infirmary by Mr Andrew Logan on a teenage youth with severe lung damage due to paraquat (a weed-killer) poisoning. The patient died 13 days post-operatively of respiratory failure - this was thought to have been caused by the effect on the transplanted lung of residual paraquat in the patient's body.

Worthy recognition of Sir Michael's major contributions to the development of organ transplantation came in 1968 with his admission to the Fellowship of the Royal Society of London and the conferment of a Knighthood. Sir Michael's gratification at these honours was compounded by the fact that the former had been instigated by his friend Sir Peter Medawar whom he regarded as the father of transplantation biology, and for whose pioneering work in this field he had always had the deepest respect. Although the work of Sir Michael's department had been predominantly focused on organ transplantation, he also became increasingly interested in immunological aspects of cancer control and initiated a number of projects in this general area. This work, continued by Sir Michael after his retirement from the Chair of Surgery with the aid of support from the Nuffield Foundation, the Melville Trust and the Medical Research Council, has generated 25 scientific papers and two books - a truly remarkable achievement.

NAUTICAL EXPERIENCES

At a comparatively early stage of their sojourn in Edinburgh, Sir Michael and his wife had their dormant interest in sailing re-awakened by a holiday in the South of France with friends who were sailing enthusiasts. As a result of this they bought a boat, joined the Royal Forth Yacht Club and became committed sailors themselves. Sailing off the South of France or in the Forth estuary has given immense pleasure to Sir Michael and his wife and family, and he writes with great authority and huge enthusiasm about a hobby to which he has clearly been deeply devoted. As a mathematician, the science of navigation obviously appeals greatly to him and he would seem to be a complete master of modern sailing technology. The social side of sailing also had a great appeal to him, and although the reviewer is not and never has been a sailor he can sense and appreciate the disappointment and sadness felt by Sir Michael when he stopped sailing in 1992 and sold his boat.

The latter part of the book includes accounts of trips made by Sir Michael and Lady Woodruff to many parts of the world, often to deliver an important commemorative lecture or to receive an honour or reward in recognition of his scientific distinction, or to participate in an International Scientific Meeting. These are of varying interest but some are highly entertaining, most notably perhaps that of their visit to China in 1979 as members of a delegation from the Royal Society of London, making an exchange visit to the Chinese Academy of Sciences. Cultural differences and linguistic problems created several awkward situations which in retrospect might seem amusing or even hilarious but cordial relationships were established, valuable information was obtained and the visit could justly be described as an outstanding success. Sir Michael's

observations on Chinese medicine and on the state of the biological sciences in China at the time of the Royal Society visit are of great interest, particularly in view of the political changes which occurred during the following 18 years.

AN ANCHOR OF CHRISTIAN FAITH

Sir Michael's final chapter entitled 'The Faith of a Scientist' will be for many readers the most significant and challenging of the entire book, and it would be an impertinence on the part of this reviewer to attempt to present any sort of summary or précis of the profound thoughts that are expressed in it. It is a most moving statement of the personal beliefs of a distinguished medical scientist who can see no incompatibility between the quest for scientific truth and the profession of a deep religious faith. If Christianity and the Christian philosophy require any defence against the onslaughts of the Darwinians and neo-Darwinians then the 'faith of a scientist' could be a valuable part of it.

Few doctors have so effectively 'filled the unforgiving minute with 60 seconds worth of distance run' as has Sir Michael throughout a life of high achievement, of which this admirable book is a most interesting and inspiring record.