

Georgiana M. Bonser

DR GEORGINA M. BONSER (née Duthie), MD (Manchester), FRCP (London), a leading woman doctor engaged in cancer research in England, died on 9 June 1979 at the age of 81.

She was born on 5 May 1898 and studied medicine in Manchester University and at King's College Hospital, London, qualifying in 1920. By 1923, she had been awarded her MD with distinction and won a travelling fellowship which enabled her to spend a year at the Institut Pasteur in Paris. While there, she met her future husband, Kenneth Bonser, an architect. In 1927 she began her long association with Leeds University and its hospitals. Fortuitously, her interests were channelled into cancer research by her chief, Professor Matthew Stewart. She was a woman with a strong sense of purpose who saw two challenges in her life, the problems of cancer and the need for women in the medical profession to establish their rightful place in an essentially male preserve. Dr Bonser's efforts were eventually to be recognised by her election to the chairmanship of the Leeds branch of the British Medical Association, in 1953, and presidency of the Medical Women's Federation in 1959, which speak for her tenacity and political acumen.

But to appreciate her real achievement, it must be recalled that cancer research, when she began, paid the handsome salary of £200 a year and it was necessary for her to take a part-time job in pathology in order to have enough money to live on. She held several posts in the Leeds hospitals and university until she finally became reader in experimental pathology and cancer research and a consultant pathologist at St. James's Hospital and lived to see this hospital translated from a poor law institution to a modern teaching hospital.

Dr Bonser's contribution to knowledge has been in the studies of chemically induced carcinogenesis of the bladder. Although the association of bladder cancer and the dyeing industry had been established in the late nineteenth century, all efforts to induce bladder tumours with the products from the dyeworks or urine of workers affected with bladder cancer were a failure. Dr Bonser, in 1937, reviewed these disappointing results which were somewhat reminiscent of the research for some of the more elusive infective agents some 50 years previously. Hueper's report that the feeding of large doses of β -naphthylamine to dogs produced bladder cancer was the turning point. By 1943, Dr Bonser reported that the following feeding purified β -naphthylamine to dogs for 5 years, bladder cancer could be induced. This helped to remove suspicion from α -naphthylamine and identify one hazard in the dyeing industry.

She soon realised that the dog was too cumbersome and expensive an animal for research and concentrated on developing models in small animals. From this time, progress was much more rapid as the waiting time to see the result of an experiment was then a matter of one to two years. Dr Bonser's team confirmed that 2-acetylaminofluorene when fed to mice was a bladder carcinogen; this was the first in a long series of experiments that resulted in her being an expert on the interpretation of the pathology of the bladder in laboratory animals.

It became clear to Dr Bonser that she needed specialist help; in part it came from Professor L.N. Pyrah, a urological surgeon who helped with surgical techniques in the animals but the whole programme really became most effective when she recruited D.B. Clayson, a young chemist and J.W. Jull, a biologist to help her. There then followed a long haul in which the metabolism of several potential bladder carcinogens was studied and the carcinogenic properties of their various derivatives tested in her systems. An important part of the techniques developed by Dr Bonser's team was the direct implantation of carcinogens in a variety of different vehicles into the bladders of rats and mice. The net result of their efforts over the next 15 years was to put one part of the bladder carcinogenesis story on to a sound scientific basis. Its eventual impact reached far beyond the dyeworks to embrace the workers in rubber and cable making industries who came into contact with β -naphthylamine. Dr Bonser's strength lay in a sense of purpose, her strong discipline and sound knowledge of general pathology as well as her natural clinical practice; in 1961 she was co-author of a book on the pathology of breast cancer.

In the University her research was solidly based on her nose for a good experiment and skill at being able to interpret the results. Many others who have delved in this field had been hopelessly wrong as they could not tell the difference between hyperplasia of the bladder mucosa from that of early carcinoma. One of her last tasks after her retirement was the writing with one of her former pupils, of a chapter on the pathology of the bladder in experimental animals in the handbook produced by the International Agency for Cancer Research.

Today, with the flood gates open to pour money into testing for carcinogens, it is salutary to reflect that in the smoke and grime of pre-war Leeds, this small, determined and formidable woman was quietly laying the corner stones of the work. The combination of her keen mind and dogged persistence was rewarded by achieving a few lasting goals, but what is most important, she was one of those pioneering women scientists ahead of her time. Georgiana Bonser had been a great credit to her University and dealt a nasty jolt to male chauvinism in medicine, both

of which must have given her the satisfaction of a life well spent.

Edward H. Cooper

Sir Peter Venables

SIR PETER VENABLES died at his home in Birmingham on Sunday 17 June 1979. He was 74. His passing leaves a gap in the world of education in Britain that cannot easily be filled.

Peter Venables started his career as a chemist; to use his own words as "a mere chemist." He emerged from Liverpool University in 1925 with a first-class honours degree in chemistry. It was typical of the man, and of his later career, that, despite the quality of his first degree, he should, before embarking on study for a PhD, have spent a year acquiring an Education Diploma. He then spent four years in research, obtaining a PhD in 1928 followed by 2 years of postdoctoral work.

For the next 11 years his career followed the standard pattern of a teacher in higher education. First as a Lecturer and later as a Senior Lecturer in the Leicester College of Technology (now the Leicester Polytechnic) and then as Head of the Science Department at the South-East Essex Technical College he continued to teach and to carry out research in chemistry. But while at Leicester his lifelong interest in the visual arts was stimulated by the close contacts he made with the staff of the College of Art.

But it was in 1941, at the age of 37, that he took the critical step that was to determine the path of his future career. He accepted the post of Principal of the Municipal College at Southend-on-Sea. This was a move into academic administration. From now on Peter Venables was not "a mere chemist"; he had entered the curious world where education and administration are blended. Academic excellence is a necessary passport to enter this world but in it academic work must take second place (and often third or fourth place), yielding to the need to provide leadership to a company of men and women characterised by independence of mind and often of equal independence of action. He had the qualities required for success, an absolute integrity of purpose which he would pursue, as the occasion required, with consummate patience, with a formidable show of strength or even, where necessary, with guile. He had a mischievous wit and could school his countenance to betray no expression whatsoever as he uttered his most outrageous quips. All in all he inspired in his friends and colleagues both an absolute trust and a deep affection, a combination that inevitably makes a leader of men, and a leader he was to be for the rest of his career.

From Southend-on-Sea he moved in 1947 to become principal of the Royal Technical College at Salford. During the next nine years he laid there the foundation upon which, much later, that college was to become the University of Salford. His qualities were recognised more widely by his election as President and later Chairman of the Council of the Association of Principals of Technical Institutions.

In 1956 he moved again, this time to the College of Technology in Birmingham. Here for a decade he presided over its development as the first College of Advanced Technology in the country, of its transition from a CAT to a technological university and, for a further three years as the first Vice-Chancellor of the University of Aston. He was, therefore, deeply involved in the pedagogical and political arguments about the growth of university and technological education throughout a period of almost revolutionary change. He brought to them his wisdom, his vision and his devotion to a humanitarian ideal. His recognition of the need to draw together the interests of industry and education led him to pioneer the sandwich course which found an honourable place in the spectrum of educational provision.

He also found time and energy to give unstinting service as Chairman, President or member of a whole range of other educational institutions. Of particular note, perhaps was the fact that the British Broadcasting Corporation and the Independent Television Authority, if they agreed on nothing else, both chose him to act over the same period as Chairman of their Further Education Advisory Council and Adult Education Advisory Committee respectively — surely a unique distinction in educational broadcasting.

In 1968 he was also Vice-Chairman of the Committee of Vice-Chancellors and Principals and it was while he held this post that he accepted an invitation from Jennie Lee to become Chairman of the Planning Committee of the Open University. It was an inspired choice; but it came as a surprise and a shock to many of his colleagues who did not share his faith in this new educational venture. But it was a venture that called for all the qualities that he had in abundance, humanitarianism, egalitarianism, the desire to harness technology to the service of society. He imprinted these qualities upon the new institution not only during the planning phase but also, as its first Pro-Chancellor and Chairman of Council, during its early formative years. Throughout that period and, indeed, right up to his death, he remained the consultant architect; his was the grand design even though others might build particular bits.

Numerous honours came his way but he remained just the same, a straightforward and uncomplicated chap. For 47 years he was sustained by a very happy and stable

home. His wife, Ethel, a distinguished scholar in her own right, shared his hopes and his motives. Our sympathy goes to her and to the children in their sad loss, a loss that seems as personal to many of us as it must be to them.

Walter Perry

H.B.D. Kettlewell

HENRY BERNARD DAVIS KETTLEWELL died on 10 May 1979, aged 72. He was one of those dedicated scientists who gave up work as a medical practitioner in order to conduct biological research, so that his professional life falls into two parts.

He was the son of Henry Kettlewell and Kate Davis. In 1936 he married Hazel Margaret, daughter of Sir Frank Wiltshire, having one son and one daughter.

He was educated at Charterhouse and Caius College, Cambridge. He obtained the degrees of MA, MB, and B Chir, and acquiring the status of MRCS and LRCP, he held several hospital appointments. During the war of 1939-45 he worked at the Woking War Hospital, subsequently taking up general practice at Cranleigh, Surrey.

In 1949 he emigrated to South Africa, researching for a time on locust control. He also conducted expeditions to the Kalahari, Belgian Congo and Mozambique. Characteristically, he drove his motor car from Cape Town to Alexandria when in 1952 he decided to take up a Nuffield Research Fellowship in genetics in the Department of Zoology at Oxford. Two years later he became a Senior Research Officer, a position he held until his retirement in 1974. He was elected a Fellow of Wolfson College, Oxford and obtained the degree of DSc at Oxford in 1975.

During his research career, he undertook lecture tours in the USA and Canada and visited Brazil for *Life Magazine* on the occasion of the centenary of the *Origin of Species*. He was co-founder of the Rothschild-Cockayne-Kettlewell Collection of Lepidoptera now housed in the Natural History Museum, South Kensington. This is of a unique type, illustrating the genetics of butterflies and moths with full references to the literature accompanying each set of specimens.

Bernard Kettlewell was the finest living ecologist of the Lepidoptera. Moreover, he was blessed with the good luck which ought to attend devoted field workers. On one occasion he found himself surrounded by large numbers of the Bath White butterfly *Pontia daplidice* in South Cornwall and had a specimen of this and of another fabulously rare species the Short tailed Blue *Everes argiades*, in his net at the same time.

It is, in particular, with the study of industrial melanism in the Lepidoptera

that Kettlewell's name will always be associated. That phenomenon involves the most spectacular, though not the most profound, evolutionary change which has ever been witnessed. He showed that over a hundred species are affected by it in Britain alone. The correct interpretation of the subject had been handicapped by the mistakes and failures of others in the past. These included the wholly incorrect explanation, depending on mutation-pressure, put forward by Heslop-Harrison. Moreover, both ornithologists and entomologists had entirely failed to realise that birds hunting by sight may selectively destroy resting moths. It was the triumph of Kettlewell to show by much detailed observation and experiment that the explanation of this occurrence by mutation-pressure is invalid, and to confute those who maintained it by collaborating with N. Tinbergen to produce brilliant cinematograph pictures demonstrating such predation.

Kettlewell was able to analyse the whole subject of industrial melanism with great success, using in particular the Peppered Moth, *Biston betularia*, of which he bred thousands of specimens for study in the field. Moreover, by various recapture methods he obtained definite information on their survival. Such melanism is confined to species that rest exposed, matching their background. Kettlewell demonstrated that the black form survives better in polluted areas but is eliminated in normal countryside. He also studied the genetics of the situation and showed that the melanism is controlled as a polymorphism, with heterozygous advantage.

This work has important ancillary applications, including an impressive demonstration of the evolution of dominance obtained by crossing the British Peppered Moth with a related Canadian species. Also the evolution of a super-gene in the Oak Eggar, *Lasiocampa quercus*. His work on the Lepidoptera extended in many other directions, including the detection of speciation in its early stages due to isolation by distance. He also carried out a remarkable analysis of variation in the Scarlet Tiger Moth, *Panaxia dominula*, conducted partly in the garden of his country house between Oxford and Banbury.

He recorded his research results in many articles. He also wrote several books, the most important being *The Evolution of Melanism*, 1973 (Clarendon Press, Oxford).

His work gained considerable recognition. He was awarded the Darwin Medal of the USSR in 1959, and the Mendel Medal in Czechoslovakia in 1965. Throughout his research career Kettlewell was constantly demonstrating the importance of studying evolution by observation and experiment using the techniques of ecological genetics.

E.B. Ford