

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