

HENRIK KACSER
BSc, MSc, PhD(Belfast), HonDUniv(Bordeaux)

Henrik Kacser was born at Campina in Romania on 22nd September 1918 (but not registered till September 27th), and died in Edinburgh on 13 March 1995. From 1952 until his death he worked at the Institute of Animal Genetics of Edinburgh University, (later incorporated in the Institute of Cell, Animal and Population Biology). He was widely known for his outstandingly original work in Biochemical Genetics.

Henrik's father, Soma Kacser, whose family originally came from the Slovakian part of the Austro-Hungarian Empire, was a Hungarian engineer employed by the German firm Deutsche Petroleum AG at the Ploesti Oilfields in Romania; his mother, Olga, was Viennese. Shortly after Henrik's birth his father was recalled to the firm's head office in Berlin, and Henrik therefore spent his schooldays in that city, attending the Tretschler Schule (a *Reform Realgymnasium*) in Prinz Regenten Strasse. He described himself as 'bright but lazy' at school. Because of Soma's origin, the Kacser family had Czechoslovak passports while living in Berlin and they resided in the pleasant middle-class district of Wilmersdorf. Henrik's last school year was however spent in Hamburg, where he gained his *Abitur*.

After leaving school, Henrik moved to Belfast, where his sister Hedi already had a job teaching foreign languages. In 1937 he enrolled as a student in the Queen's University, where he graduated in 1940 with a BSc in Chemical Technology. In 1942 he obtained the MSc degree with a thesis entitled 'Resolution of Racemic Acids'. Being nominally a Czech citizen, Henrik was treated by the British authorities during the war as a 'friendly alien', but his applications for service in both the Czech Army and the RAF were for some unknown reason rejected. Instead he became an Air Raid Warden, and was appointed a 'Gas Identification Officer' because of his knowledge of chemistry. Shortly before the war his mother also visited Belfast, but was not able to return to Germany because of the cancellation of trains and ships in the last days of peace. Soma however was in Hamburg, and although intermittent correspondence between Hamburg and Belfast was possible during the 'phony war' period of 1939/40, all contact with Soma was lost in 1943, and he was thought to have perished in Auschwitz.

In 1947, Henrik obtained British citizenship, and did some lecturing in the Department of Chemistry in Belfast. He obtained a PhD in 1949 for a thesis entitled 'The Thermodynamics of Systems Containing Optical Isomers'. In 1952 he was awarded a Nuffield Fellowship in a scheme for introducing physical scientists into biology, and on the advice of Eric (later Lord) Ashby, then Vice-Chancellor of Queen's University, came to the Institute of Animal Genetics in Edinburgh, where he took the course for the Diploma in Genetics. In 1955 he was invited by Professor C H Waddington to join the staff as a lecturer and later was promoted to the grade of Senior Lecturer. After retirement in 1988 Henrik was given the title Fellow of the University of Edinburgh.

He took a prominent part in administration and teaching in the Genetics Department. Many students will remember his highly idiosyncratic lecturing technique. He spent much time in long discussions of the significance of particular steps in a scientific argument, and relatively little on factual data. No doubt this was irritating to the average student, but of great value to those who were seriously interested in science. Henrik was also a conspicuous member of the audience at any seminar which he attended, making frequent and usually critical comments. With his PhD students, every detail of their programmes had to be thrashed out - usually over innumerable cups of coffee.

His approach to genetics and biochemistry was strongly influenced by his previous training in physical chemistry. Undoubtedly his greatest contribution to science was a landmark paper entitled 'The Control of Flux', written in collaboration with J A Burns, and presented to a largely sceptical audience of biochemists at the 27th Symposium of the Society of Experimental Biology at Oxford in 1972. Twenty-one years later an updated version of this paper (with D A Fell as an additional author) was published as part of a colloquium of the Biochemical Society at the University of Sussex in Henrik's honour. Moreover, plans are now being made to publish a memorial issue of the *Journal of Theoretical Biology* in 1996 devoted to his work. The original idea underlying this work probably surfaced during long discussions between Henrik and one of his PhD students, W D Donachie, in the early 1960s. Previously, geneticists and biochemists had considered metabolic processes as being controlled by single genes and single enzymes, but Henrik and his colleagues showed that variations in the amount or activity of individual enzymes often had little or no effect on the outcome of a chain of reactions. Instead, varying amounts of control are exerted by *many* enzymes in a pathway, and this is a property of the metabolic system as a whole, rather than of individual 'pace-maker' enzymes. Henrik and Jim Burns developed theoretical and computer techniques for investigating these problems. In the course of time, Henrik's ideas have gradually gained widespread acceptance. His 'Control of Flux' theory, now designated 'Metabolic Control Analysis' also has implications for our understanding of the genetic phenomenon of dominance, as shown by an important paper by Kacser and Burns published in *Genetics* in 1981.

Henrik's achievements in science were recognised by the award of the Fellowship of the Royal Society of Edinburgh in 1990 and by an honorary doctorate of the University of Bordeaux in 1993. Outside the university, he had many other interests. Whilst still in Belfast in 1947 he met and married Beatrice McConkey, who later joined him in Edinburgh where she established an elegant dress shop ('Beatrice Kay'), in George Street. Here Henrik liked to help design the window displays. Sadly she died in 1969. In 1978 he married Elaine Daffern, with whom he spent the last 17 years of his life living in one of the old Edinburgh houses which he renovated.

In 1990, on a visit to Uruguay to conduct a workshop on his research, Henrik developed some heart irregularities, and had a pace-maker fitted. Afterwards he enjoyed relatively good health for a while, and actively continued research with his group in Edinburgh till a few days before his death from a stroke in March 1995. He was an amazingly versatile, creative and kind-hearted person, who will be much missed by his many friends in Edinburgh and around the world.