

obituary

Professor Philip Macdonald Sheppard, FRS, died on October 17, 1976. He was an outstanding scientist, an inspiring teacher, a formidable adversary and a very good friend.

Philip Sheppard was born in 1921, the son of a schoolmaster. He was educated at Marlborough College. He joined the Royal Air Force Volunteer Reserve in 1940, and was a prisoner-of-war from 1942 to 1945. Immediately after the war he went up to Worcester College, Oxford, to read Zoology, and in 1948 was awarded a second class Honours Degree. It is said that he could easily have gained a 'first' had it not been for his single-minded devotion to genetics, the subject to which he dedicated the rest of his life.

He studied for the D.Phil. at Oxford under Dr (now Professor) E. B. Ford, and obtained the degree in 1951. From 1951 to 1956 he was Junior Research Officer in the Department of Zoology, taking a year off in 1954 to work with Professor Theodosius Dobzhansky at Columbia University. In 1956 he was appointed Senior Lecturer in Genetics in the Department of Zoology at Liverpool University. He was promoted to Reader in 1959. In 1963 he became the first Professor of Genetics at Liverpool, and remained in this post until his death. He was elected to a Fellowship of the Royal Society in 1965, and to an Honorary Fellowship of the Royal College of Physicians in 1975. In 1974 he was awarded the Darwin Medal of the Royal Society, and in 1975 the Gold Medal of the Linnean Society.

The bare description of a distinguished career shows little of the great impact that Philip Sheppard made on the study of ecological genetics. He had an almost uncanny ability to see the next step in an argument, the next experiment to be done. He applied this ability freely and generously to the work of others, and generated many an idea or experiment that came to be published under another name.

His own work completed the transformation of ecological genetics from a science of observation to a science of experiment. His central interest lay in the mechanics of natural selection and its effects on the genetic constitution of organisms. This interest guided his work with Sir Ronald Fisher and Professor E. B. Ford on polymorphism

in the moth *Panaxia dominula*, in which they finally demonstrated that the temporal changes of gene frequency were the consequences of natural selection. It motivated his studies with Professor A. J. Cain on polymorphism in the snail *Cepaea nemoralis*, studies which showed that spatial variations in this species were also due to selection, and which culminated in his beautiful experiments on selective predation by thrushes. It also guided the work with Sir Cyril Clarke on mimicry in butterflies of the genus *Papilio*, demonstrating the evolution of 'supergenes', linked polymorphic complexes of genes maintained in a state of linkage disequilibrium by strong selective interactions. Their interest in such interactions led Sheppard and Clarke to studies of human blood groups, bringing them finally to a method of preventing Rhesus haemolytic disease. Apart from these classic experiments, Sheppard also made important studies on the evolution of dominance, the genetics of industrial melanism in moths, heavy metal tolerance in plants, insecticide resistance in mosquitoes, and schizophrenia, anencephaly and spina bifida in man. In 1958 he published *Natural Selection and Heredity*, and the fourth edition was issued shortly before his death. It is still the best introductory book about ecological genetics, and one of the rare breed of elementary texts that are quoted in the research literature because of the original ideas that they contain.

He was an exceptional teacher. His transparent intellectual honesty, his passion for truth and rigour, and perhaps above all his patent desire that his hearers should understand and enjoy his subject, made an enduring impression on his students. As a colleague and friend he was a delight, and a very good companion. His comments on cherished ideas or manuscripts were sometimes blunt to the point of pain, but they were always given with good humour, never tinged with malice. His friends said that he reversed the normal academic procedure; he stabbed you in the front, and then did you favours by stealth. Hating pomposity, he was marvellously uncorrupted by success. As a distinguished Darwin Medallist he was much the same Philip Sheppard as the Junior Research Officer at Oxford.

He bore his three-year illness with quite extraordinary courage and cheerfulness.

His life can be epitomized in the words of one who was also a prisoner-of-war: "To serve his vision, to protect it against all plausible substitutes, reasonable approximations and coward compromises is still, I believe, the knightly duty of contemporary man. He has only to remain steadfast in pursuit of it and his life will achieve something which is greater than happiness and unhappiness: and that is meaning." **B.C.C.**

Sigurd Zienau died on October 18, 1976 at the early age of 55 years. He had been a Reader in Physics at University College London since 1965, following a period from 1954 as a Lecturer, and as ICI Research Fellow at Liverpool.

Dr Zienau was trained in the old school of European physics, being a student of Heitler, Pauli and Fröhlich, after a distinguished period as a mathematics undergraduate at Birkbeck College.

His name is familiar to solid state physicists as a co-author of the theory of the polaron through which, in 1950, field theory was introduced into solid state physics. He will also be remembered in the worldwide community of theoretical physicists for his important revisions of two classic texts in theory: both Heitler's *Quantum Theory of Radiation* (3rd ed.) and Mott and Massey's *The Theory of Atomic Collisions* (3rd ed.) owe much to his labour and insight. He had a phenomenal memory for the literature of theoretical physics and would recall from obscure journals published in the first half of the century the seminal work that could shed light on modern problems. His main research interests lay in scattering theory and electrodynamics, but he had a scholarly interest in a much wider range of subjects.

Dr Zienau's published papers do not, in quantity, do justice to his gifts. However, they are thoughtful contributions and each one represents the distillation of many months hard work, as well as hard argument, with his co-workers. There are three phases of his research represented in these papers. In the early 50s he published work on dielectrics, especially on the motion of