



## IN MEMORIAM

Eric B. Edney  
Professor of Zoology  
UC Los Angeles  
1913 – 2000

Eric Berry Edney was born in 1913 in Bognor, England and passed away suddenly on May 28, 2000 in Vancouver, BC; he was 86 years old. The same qualities that made him a great scientist made him an exceptional person: he had an infectious enthusiasm, intense intellectual curiosity about almost everything, was an optimist, sincere, modest, and with a passion for his work and a welcoming attitude toward new challenges.

When he was still young, Eric and his family moved to Rhodesia where he was sent to an elite boarding school for whites. Eric was keen on becoming a physician, however, at age 18 he read an article by Julian Huxley predicting a great future for the biological sciences, and with the great depression on, a long expensive medical training was out of the question. He began to do zoology at a small liberal arts college in Bulawayo, Rhodesia. Classes were small, standards were high, and soon he developed a strong interest in zoology for its own sake. After writing his finals at the end of the senior year he stayed on to help with research on the behavior of sand wasps in the Matopo hills, not far out of town. Subsequently, he received his B.Sc. in 1933 from Rhodes University College, and then obtained a fellowship to Imperial College in London to do graduate work, receiving in 1936 both a D.I.C. from Imperial College of Science and a Ph.D. from the University of London. Eric met "Gwen" (Gwendoline Jessie) in his first year in London, and they married the year after his graduation. His first professional employment was as assistant zoologist in the National Museum of Southern Rhodesia (1936-1940), and then a lecturer in biology at Makerere College, Kampala, Uganda (1940-1946). For the ten years he was in Uganda he worked on fleas that carry bubonic plague---doing both classical taxonomy and pioneering experimental work on how climate and other environmental factors might determine outbreaks of plague. During World War II he was a member of the Uganda Defense Force. After the war he returned to England as lecturer in zoology and reader in entomology at the University of Birmingham (1946-1955) where he received a D.Sc. degree, and concentrated on the adaptations of the crustacean- like woodlice and sowbugs that allowed them to move to land and thrive in damp locations. He was interested in how they differed physiologically from land- living arthropods, including insects, ticks, millipedes and scorpions, which were also studied. In 1955, he moved to Africa again, and from 1955 to 1964 he was professor of zoology and head of the Department of Zoology at the multi- racial University College of Rhodesia and Nyasaland where he built the department from scratch, starting in a tin hut.

In 1965, sensing that the political changes in Rhodesia would be destructive both socially and scientifically, Eric left Africa and joined the faculty of the Department of Biology, University of California, Riverside as professor of zoology. He served as chairman of that department from 1968 to 1970 before leaving Riverside in 1972 to become professor of zoology and associate director of the Laboratory for Nuclear Medicine at the University of California, Los Angeles, where he headed the Division of Radiation Ecology. During this period he did field work in the Namib Desert and at Rock Valley at the Nevada Test Site to understand how deserts work, how radioactive contamination influenced the desert biota, and used radioactive water to measure total body water exchange over long periods in desert arthropods living freely in the field. He reported that beetles in the Namib Desert drank water from dew that condensed on their bodies and on sand dune ridges. He demonstrated that insects can take refuge from lethal high temperatures and low humidity in the desert by

moving into burrows in the soil that had microclimates that are more favorable. This work emphasized the importance of animal behavior in water balance. Eric retired from UCLA in 1979, moved to Vancouver, BC and continued to have an active research program, having an honorary faculty position in the Zoology Department at the University of British Columbia. He stopped doing experiments at the bench only when he was forced to by a gradual loss of his sight in the late 1980s due to macular degeneration. Despite this limitation, he maintained his vitality, curiosity and connection to friends with similar interests in the world and ideas; he had a dear friend who would read to him, and in this way, he was able to keep abreast of what was going on in the sighted world. He learned to do pottery, spinning, volunteered as a peer worker with the Canadian National Institute for the Blind and wrote short stories and poetry, some of which were related to his scientific work.

Eric Edney is best known for his work on several aspects of water balance mechanisms in arthropods, particularly with respect to adaptations to life in deserts. He chose to work with desert organisms because it seemed to him, he says, that desert organisms, subjected as they are to dehydrating conditions, might possess in highly developed and therefore readily investigated states, adaptive mechanisms concerned with water balance that are of more general interest. This, in fact, proved to be the case. During his long and distinguished career Eric produced dozens of research papers concerned with water balance in land arthropods, many of which have become classics in this field. He studied the remarkable waterproofing properties of the insect cuticle, due in part to the surface layer of wax molecules that melt at a critical temperature, above which rapid evaporation of water quickly causes dehydration and death. However, water loss cannot be prevented during gas exchange (i.e. breathing) and he entered the debate as to whether discontinuous respiration (i.e. short bursts of intermittent breathing) reduced water loss. He was amongst the first to observe and study an unusual adaptation of some flightless insects e.g. fleas, desert cockroaches, and dust mites, ticks that had no source of fluid water to drink and found they are able to absorb water vapor directly from the air even down to 50% relative humidity. His seminal work on this subsequently stimulated a number of laboratories to carry on research on this interesting phenomenon. Much of his work is summarized in two books on water relations in arthropods (1957: *The Water Relations of Terrestrial Arthropods*, Cambridge Press; 1977: *Water Balance in Land Arthropods*, Springer Verlag).

Former students of Eric hold faculty positions in major universities throughout the world.

Eric received numerous honors, including election as Fellow of the Royal Entomological Society, the Institute of Biology, and the American Association for the Advancement of Science. In addition, he was awarded the Scott Medal and was a Guggenheim Fellow. Eric Edney was a major scientific force in his field and he will be greatly missed by colleagues throughout the world but his scientific legacy will live on.

Eric's wife, "Gwen" died on February 6, 2008 at the age of 95 in Vancouver, BC, and she is survived by a son, Julian of Los Angeles, and a daughter, Ray, and partner, Monica, as well as by many dear friends and kind companions.

Irwin W. Sherman  
Kenneth Nagy  
John Crowe  
John Phillips  
Ray Edney