obituary

Raymond Bridgeman Cowles, Professor of Zoology at the University of California, Los Angeles, died on December 7, 1975, at the age of 79. Born in Natal, South Africa, he spent his childhood there but was educated in the United States, receiving his doctorate at Cornell University in 1928.

Two themes from his Natal boyhood were stamped on Cowles' subsequent career: first, the many animal-environmental relationships he saw in the bush near his home in the Umzumbe Valley, such as the monitor lizards that laid their eggs in the almost impregnable fortresses of termite nests, and second, the transformation of the Zulu to a state of deep poverty as their numbers increased. His career was further stimulated by the work he did to raise money for his education: he worked as a 'muleskinner' and as a canal guard in the then desert wilderness of the Imperial Valley of California.

His tools were the simplest of instruments: the camera, the thermocouple and thermometer, and his own critical powers of observation, yet he founded the field of thermal relationships of reptiles. He did more classic work on the pit-organ of rattlesnakes, where he demonstrated the exquisite thermal sensitivity of this receptor. Blindfolding the rattlesnake, he swung before it a glowing electric bulb encased in black cloth. Often enough, the snake struck at the "warm prey object", hitting it in midswing with a deadly-accurate spray of venom. One had no trouble envisioning a leaping desert mouse or pocket gopher receiving the same treatment, all through central

integration of afferent impulses from the most sensitive thermal receptor in the animal kingdom.

The same quality of insight led to the remarkable generalisation that male germ cells in diverse species are inactivated by exposure to approximately the same thermal levels. Central to this finding were observations that male reproductive tissues are protected from high temperatures in various ways; for example, the scrotum of mammals and the placement of gonads of birds adjacent to air sacs within the body. Cowles also saw that blood flow was responsive to temperature, and that this dynamic interaction was crucial to thermoregulation in reptiles, birds, and mammals, proving this by beautifully 'simple' experiments.

Professor Cowles also performed early work on water conservation and loss in desert animals and many other ecological subjects. Another dominant factor in his later career was his realisation that the human race violated the rules by which living things in nature subsisted in ecological harmony. A major book on this subject was just completed at the time of his death and awaits publication.

An important part of Cowles' writing was for the interested public, but he taught most of all by encouraging his students to participate in the excitement and insights of field trips, thinking with him as he pondered on what he saw. A motor trip through the desert might find him ranging across topics as diverse as the migration of waterfowl over established desert flyways, the economic use of the jojoba plant (which is now being used

to provide a substitute for sperm whale oil), the dynamics of soil and sand movement in response to wind and water, the basking behaviour of rattlesnakes on warm pavements at dusk, or the aerodynamics of bird flight—the car's speed would be adjusted to that of a bird flying alongside, and its speed checked.

Professor Cowles was serenely unimpressed by his many academic accolades, and everywhere he was much respected for his deep honesty and warmth as a human being.

Kenneth S. Norris
Clara M. Szego

John Buchan Jepson, who died on May 7 aged 53, was the Professor of Biochemistry at the Middlesex Hospital Medical School.

After taking a first degree at Cambridge, he went to work for his doctorate at Oxford, where he did research on Penicillin under the supervision of Sir Robert Robinson. He later worked on the biochemistry of amino-acids, hydroxylases and psychomimetic amines, and also on hereditary diseases and chromatography. He was also very interested in Biochemical Education; he was always trying to find new methods of conveying the excitement, importance and relevance of his subject—and as enthusiasts always do, he succeeded in involving his audience. Another aspect of this interest was the efficient and rapid communication of research. He was chairman of the Committee on Biological Information, and worked right up till his death on new means of data dissemination.

announcements

Meetings

June 10, **Conservation of Wild Life in Kenya**, London (The Secretary, The Royal Society of Arts, John Adam Street, London WC2 6EZ).

July 5–8, **Mathematics of Hydrology and Water Resources**, University of Lancaster (The Secretary and Registrar, Institute of Mathematics and its Applications, Maitland House, Warrior Square, Southend on Sea, Essex SS1 2JY, UK).

September 6–9, **Nonlinear Waves and**

Solitons, University of Newcastle upon Tyne (The Secretary and Registrar, Institute of Mathematics and its Applications, Maitland House, Warrior Square, Southend on Sea, Essex SS1 2JY, UK).

September 14–16, **Theoretical Developments in Control**, University of Leicester (The Secretary and Registrar, Institute of Mathematics and its Applications, Maitland House, Warrior Square, Southend on Sea, Essex SS1 2JY, UK).

December 21–22, **The Structure and**

Assembly of Biological Systems, London (Dr A. C. Allison, Clinical Research Centre, Watford Road, Harrow, Middlesex, UK).

April 18–22, 1977, **Fifth International Conference on Reactor Shielding**, Knoxville, Tennessee (Deadline for abstracts: August 20) (D. K. Trubey, Radiation Shielding Information Centre, Oak Ridge, National Laboratory, PO Box Y, Oak Ridge, Tennessee 37380).

July 11–15, 1977, **Veterinary Parasitology**, Sydney, Australia (The Secre-