# zoology

## Taking careful aim

The distinctive markings and colors that identify various species of birds and animals are more than just decoration; zoologists believe they serve as camouflage, as social signals, or for regulation of body temperature.

Certain markings, say Robert W. Ficken and Paul E. Matthiae of the University of Wisconsin at Milwaukee and Robert Horwich of the Chicago Zoological Society, may have yet another, very specialized, function. Eye lines, well-defined marks extending from the eye toward the bill tip or snout of some predatory species, may enhance vision and serve as lines of sight in tracking and capturing swiftly moving prey, they write in the Sept. 3 SCIENCE.

The lines, they point out, are generally pointed toward the spot where an animal's prey would be expected—just below the bill tip in birds, for example. The researchers also found a high correlation between presence of eye lines in North American songbirds and feeding on swiftly moving prey.

## Those iridescent fish eyes

Iridescence, a rainbow-like display of colors, has been observed in a variety of animal tissues. In fish, silvery iridescent scales and irises are known to be camouflage devices.

Many fishes also have a colored iridescent layer on the inner surface of the cornea, says J. N. Lythgoe of the University of Sussex, England. However, there is no obvious correlation between the color of corneal iridescence and the color of the water in which the fish live, he says. In fact, corneal iridescence often shows up extremely bright underwater.

Lythgoe studied the angles at which corneal iridescence was visible in fish collected in the Indian Ocean. When viewed from below and somewhat from in front, the iridescence was invisible. All the fishes known to possess this iridescence, he writes in the Sept. 17 NATURE, live near the ocean bottom. He suggests that iridescence may act as a sunshade to reduce by reflection the light from above, thus allowing the dimmer light reflected from the sea bed to enter the eye without loss.

## Eating away the rock

Because of its location off La Jolla, Calif., the Scripps Submarine Canyon has been well studied. But its origin and later development is still not completely understood.

John E. Warme of Rice University and Thomas B. Scanland and Neil F. Marshall of the Scripps Institution of Oceanography believe that rock-burrowing submarine animals play a larger role in development of the canyon's topography than does physical and chemical erosion.

Samples collected at 20 different localities in the canyon all exhibit some erosion by submarine creatures, they report in the Sept. 17 SCIENCE. Large fallen rocks were largely or wholly bounded by burrows.

The most abundant of the rock excavators are mollusks, some of which dig with their shells and some of which burrow by chemically dissolving surrounding rock. The researchers estimate that the rate of erosion due to biological activity is between 2 and 10 millimeters per year.

# medical sciences

## Triple vaccine for children

The past decade has seen the development and licensing for general use of three new live virus vaccines: measles, mumps and rubella. Now a team of doctors at the University of Pennsylvania School of Medicine headed by Joseph Stokes Jr. has developed and tested on a large clinical scale a vaccine incorporating all three live viruses.

The children, ages seven months to seven years, had never had measles, mumps or rubella. Over-all 96 percent of them developed immunity to measles, 95 percent to mumps and 94 percent to rubella. The side effects were similar to those from measles vaccine alone—mild fever and rash.

The combination vaccine, the investigators report in the Oct. 4 JOURNAL of the AMERICAN MEDICAL ASSOCIATION, provides a "simple, safe and effective immunization procedure," especially suited to children whose parents have trouble getting them to the pediatrician on more than one occasion.

## Appetite control and protein diet

The appetite control button is believed to reside in the hypothalamus, but efforts to control it, such as with intrahypothalamic injection of nutrients, have been generally unsuccessful. Now Jaak Panksepp and D. A. Booth of the Laboratory of Experimental Psychology at the University of Sussex, England, have found that mini-injections of amino acid solutions into hypothalamic tissue inhibited rats' appetites.

The findings complement recent reports that high systemic levels of amino acids depress feeding more than comparable levels of other major nutrients. The new evidence suggests that circulating amino acids depress appetite by slowing the transmission of hypothalamic nerve messages that are active during feeding behavior. In any case, the authors caution in the Oct. 1 NATURE, it is not yet known whether the observed effect reflects the operation of a physiological control mechanism.

## The nature of acoustical damage

Many studies have been undertaken to pinpoint the nature of acoustical trauma from noise, but the exact mode is still a matter of controversy. Two physicians at the Ohio State University College of Medicine report experiments in the October ARCHIVES OF OTOLARYNGOLOGY that may further illuminate the process.

After exposing guinea pigs to noise, which was increased over a period of hours, David Lim and William Melnick noted a number of physiochemical changes in the sensory cells of the cochlea, or inner ear. The effects included dilation of the cells' nuclear membranes; abundant accumulation of lysosomal granules in the cells' cytoplasm; and the eventual rupture and death of the cell.

Although these results do not negate mechanical injury to the inner ear, which other studies have suggested, the authors believe that acoustical damage is probably more physiochemical than mechanical, for several reasons. One is that changes in isolated sensory cells apparently did not affect neighboring cells. The second is the apparent selective involvement of the afferent and efferent nerve endings.