

Why predators stalk by night

For years, hunters and scientists alike have known that nature seems to come alive after sundown. Under the cover of darkness, even barren desert areas can burst forth with a scurry of activity as tiny animals hurry about gathering food—and larger animals hurry about gathering them. Experiments have shown that, given a choice, wild mice and other small nocturnal rodents clearly demonstrate a preference for dim light, comparable to moonlight, for their activity; but until now, no one has known for sure whether the predators also genuinely preferred hunting at night or whether they had learned that that's when hunting is best.

Some biologists at the University of California, Los Angeles believe they may have answered the question. They placed various predators, including foxes, weasels and ring-tails, in environments where they could control the light level themselves. Given the choice, all eventually preferred to be active with plenty of light; some still preferred to sleep in darkness, while others kept the lights on all the time. The implication, according to the UCLA team, is that such predators are more active at night simply because more prey is available then, rather than because of any inherent nocturnal adaptation.

Saving the polar bear

Diffident and unknown, a model of lumbering grace, the polar bear has always been the absolute lord of all he surveyed in a way no lion could match in his jungle. As interest in arctic wealth grows, however, that dominance will be challenged by man, and the polar bear's very existence could be threatened if the great food chain he surmounts were significantly altered. To ease the bear's habituation to human activity, the United States, Norway, Denmark and Canada have signed an agreement on its management. Senate ratification will be needed in this country and Russia is expected to join the agreement soon. According to the *OUTDOOR NEWS BULLETIN*, the new agreement provides for increased research, exchange of scientific information among the countries and protection of the bear's habitat.

In the December *SCIENCE FORUM*, three Canadian scientists report the latest efforts of that country to learn more about polar bears, including establishment of a major research project at Fort Churchill, Manitoba. Radio transmitters implanted in a bear's body will provide information about the peripatetic animal's wanderings and metabolic changes. The information is expected to help in the care of zoo bears as well as management and protection of those in the wild. Experiments at Fort Churchill have already revealed the magnitude and difficulty of the proposed study: a polar bear can easily cover some 240 miles in two weeks.

A pretty fishy pepperoni

The National Marine Fisheries Service has successfully demonstrated machinery that the Director Robert W. Schoning says "could bring about another revolution in U.S. fisheries." The machinery makes a product called "minced fish" from meat stripped from dressed fish carcasses or from the bodies of less popular fish, such as carp. Prepared into a spread with the texture and color of cream cheese, the rendered fish protein can be given the taste of almost anything from salmon to pepperoni. The spread can be mixed with buttermilk to give a low-calorie mayonnaise-like dip, or the straight minced fish can be pressed into blocks and deep-fried as a snack. Schoning expects such products to make underutilized fish species commercially profitable.

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Stratosphere low in nitric oxide

One of the arguments against commercial supersonic transports—exhaust pollution of the upper atmosphere—may have been strengthened by the finding that there seems to be only a third as much nitric oxide in the stratosphere as was theoretically predicted.

The measurements, made from balloon-borne instruments by the National Oceanic and Atmospheric Administration's Air Resources Laboratories, are claimed to be the first of their kind ever taken in the stratosphere.

There has been some concern, underlined by SST opponents, that excesses of nitric oxide from high-altitude aircraft exhausts could act to reduce the ultraviolet shielding effect of the stratosphere's ozone layer, allowing possibly hazardous amounts of UV radiation to reach the earth's surface. There is believed to be relatively little vertical mixing in the stratosphere, so added pollutants such as nitric oxide might be trapped there in increasingly heavy concentrations.

The finding of low present levels of NO could mean that additions from aircraft would produce greater than anticipated increases in the percentage of the gas. On the other hand, says Thomas E. Ashenfelter, director of the NO monitoring project, there may simply be holes in present theory. "For example," he says, "there may be undetected processes at work here—chemical reactions with compounds besides ozone, vertical mixing, and photochemical effects of solar radiation—that would keep nitric oxide concentrations in the stratosphere at acceptably low levels."

Artificial snowstorms assault missiles

Artificial storms of real snow are being created in a wind tunnel to let U.S. Air Force engineers study the abrasive effects of snow on "reentry shapes" such as missiles.

In a 1,000-foot ballistic test tunnel at Arnold Engineering Development Center in Tennessee, water is condensed into true snowflakes on cold plates, then jarred loose by an explosive bump. By using liquid nitrogen, which cools the plates from room temperature to minus 40 degrees F. in two minutes, engineers are able to keep the water from passing through a liquid phase, which would cause it to form ice instead of snow. Test projectiles are then fired through the snowfall, which can be varied in density by delaying the firings or by increasing condensation times on the plates.

Most of the tests so far have been with relatively wet snow, but engineers are working on producing the dry, powdery snow seen at very cold temperatures.

Viking booster is NASA's newest

The space agency's first new launch vehicle combination in six years, assembled from existing stages primarily for the Viking Mars missions next year, is set for its first test flight this month with an added bonus: a satellite.

The new configuration combines the liquid-fueled main stages and solid-propellant auxiliary boosters of the Titan rocket with the powerful, liquid-hydrogen-burning Centaur upper stage. This enables it to fill the gap in both power and cost between the Atlas-Centaur and the Saturn series.

The first two firings of the vehicle's engines will stimulate those of the Viking flights. In addition, the Titan stages will be guided for the first time by the upper stage guidance system rather than from the ground. Also, a SPHINX (Space Plasma High-Voltage Interaction Experiment) satellite will be orbited to study the effects of charged particles on high-voltage components envisioned for future probes.

27