

# BIOLOGY

Joan Arehart-Treichel reports from the annual meeting of the American Institute of Biological Sciences in East Lansing, Mich.

## Great Lakes: Some gloomy predictions

Human destruction of the Great Lakes is relatively recent in origin, David M. Gates of the University of Michigan Biological Station, Ann Arbor, explained in a keynote address on the Great Lakes' past, present and future.

Specifically, the Great Lakes, the largest fresh water resource in the world, remained pristine for the first 16,000 years of their existence. But then destruction arrived around 1850 and has been snowballing ever since. Loggers razed lake forests to build the towns of Midwest America. As the forests were cleared, the passenger pigeon became extinct. Once the lakes were connected with the Atlantic Ocean, sea lampreys migrated into the lakes, sucked the life out of lake fish and upset the lake food chain. Today lamprey control costs \$5 million a year. Fish in the lakes are also contaminated today with polychlorinated biphenyls (PCBs), from both air and land.

But still more destruction of the lakes lies in the future, Gates predicts. Population, industrial, commercial and recreational demands on the lakes will continue to increase. Fossil-fuel burning and forest clearing will lead to a rise in CO<sub>2</sub> in the atmosphere over the lakes and hence warm them. The lakes' water tables will also drop.

## The lives of lizards

T. C. Moermond of the University of Wisconsin, Madison, studied the foraging behavior of lizards in the West Indies. He reports that those lizards that live in grasses and bushes jump for prey most of the time, and that those living in shrubs and trees tend to run after prey, and those living on tree limbs and rocks tend to crawl after prey. After studying the mountain spiny lizard of New Mexico and Arizona, R. E. Ballinger of the University of Nebraska, Lincoln, reports that it matures, reproduces and dies somewhat earlier at lower altitudes than it does at higher altitudes.

## Alligator radiators

To better understand how alligators use environmental radiation to keep their bodies warm, J. R. Spotila and K. M. Terpin of the State University College at Buffalo and of Ichthyological Associates, Inc., Brigantine, N. J. put alligators of different sizes in a chamber whose environmental conditions could be controlled. They report that there was a one-to-one ratio between alligator body temperature and air temperature as long as no light was present. But once light was introduced into the chamber, the alligators' body temperature rose, especially the temperature of larger alligators.

Why might larger alligators be better radiators? Probably because they have thicker skin and hence better insulation than smaller alligators, the researchers speculate.

## Turtle reproduction

J. W. Gibbons and J. L. Greene of the Savannah River Ecology Laboratory, Aiken, S. C., in an attempt to learn more about turtle reproduction, fenced in a mile of lake shoreline. As female turtles crawled away from the lake to lay eggs, they came to the fence and fell into various tubs placed along the fence. The researchers then marked the turtles for identification and X-rayed them during several reproductive seasons to see how many eggs they ovulated.

Their findings: As female turtles get larger, they tend to produce more eggs. However, turtles may vary in their egg output from one year to another. Gibbons and Greene will now attempt to discover why.

# TECHNOLOGY

## Better resolution of cell proteins

It looks like an astronomer's sky chart but it's really a computer map of cell proteins. James Garrels, at the Salk Institute in San Diego, has devised a refinement of two-dimensional electrophoresis to improve separation of cell proteins into patterns for scanning and plotting by computer. First it separates proteins by electric charge, then by molecular weight.

Garrels's technique can individually distinguish more than 2,000 of a cell's 5,000 to 10,000 proteins—double the amount available before.

The process involves tagging proteins with a radioactive amino acid. When dried electrophoresis gel is placed beside X-ray film, darkened spots of varying intensity result. Intensity designates the quantity of that protein synthesized during the two hour or so period that the living cell was permitted uptake of the radioactive tag. Coordinates of each spot, or protein, represent its charge and molecular weight. Garrels calibrates each new map for the computer on the basis of several hundred key proteins in a "standard." The computer reads and stores this data which can later be displayed as a map.

Accurate standardization of the process could lead to a computer data bank of standard maps. Maps would be species specific, but maps for different cell types within a species could be compared. For now, Garrels compares a succession of "snapshots," noting changes in proteins such as might occur during cell differentiation, mutation or cancer transformation.

## Unusual low-cost homes

Research into unusual construction, by Germany's Kassel General University, has come up with some bizarre concepts ranging from an igloo made from sulfur, gravel and sawdust to a yurt with walls of greenery growing from sacks attached to a foil-covered wooden lattice. Each is built on the premise that emergency low-cost housing, costing no more than \$40 for energy and materials, should be available for use in under-developed nations. Concepts are designed for simplicity and quick construction using unskilled labor and readily available materials.

## Technology transfer on a personal basis

A "Yellow Pages" of technology is how Control Data Corp. describes Technotec, its computer-based technology-exchange service. Users interested in a particular technology need only search, for an average charge of \$8 or \$10, the listings stored in a \$1 billion computer network via a Telex, TWX, telephone or computer-terminal connection. Already more than 561 organizations—from 19 countries, including the USSR—have listed a total of more than 15,900 entries.

More than a marketplace for wares, Technotec is designed to eliminate the costly and vexing "reinvention of the wheel." Inventors with enterprises or skills as limited as the basement tinkerer to organizations as large as government agencies can list their process, service, widget or expertise for a cost of \$100 per year for a 1,000-character description. If a searcher finds what he wants, he can query the party listing the technology for a fee of around \$50.

Some matches have been almost instantaneous. An electroplating firm in the Minneapolis-St. Paul area offered zinc sludge slurry under Technotec's waste-exchange category. The very next day, someone using Technotec asked for a zinc source for use in pigments. Other matches have taken longer but paid handsomely. A California inventor of a quick-freeze immersion machine negotiated contracts with five countries, including Poland and Japan. He says his listing cost only \$68 and several telephone calls but that earnings on resulting contracts could run as high as \$300,000 a year.