

## Gender-bending PCBs

When applied at particular times during fetal development, the hormone estrogen can turn animals that should have been males into females (SN: 1/22/94, p.56). Working with turtle eggs, a zoologist at the University of Texas at Austin has now demonstrated that at least two polychlorinated biphenyls (PCBs) possess a similar feminizing capacity.

The doses needed were small, notes Judith M. Bergeron — around 200 micrograms per egg of either PCB, or just 10 to 100 µg per egg if the two PCBs were given together. Indeed, her team reports in the September ENVIRONMENTAL HEALTH PERSPECTIVES, resulting concentrations “are comparable to average levels of PCBs found in human breast milk in industrialized nations.”

The sex of many reptiles can be set by the temperature at which an egg incubates. For the red-eared sliders that Bergeron studied, hatchlings from eggs incubated at 31°C normally will all be female. Incubating those same eggs at 26°C yields exclusively male turtles. And both sexes emerge from eggs held at intermediate temperatures.

Bergeron painted slider eggs with the 11 PCBs suspected of estrogenic activity — singly and in various combinations. When she incubated them at temperatures that should have produced predominantly or exclusively males, two PCBs proved strongly feminizing. But depending on the dose and incubation temperature, the compounds sometimes fostered only a partial sex reversal, creating “intersex” animals. These sliders sometimes developed male testes, for instance, but only in conjunction with structural antecedents of a female oviduct.

Bergeron’s team “did an outstanding job of investigating a wide variety of congeners [individual PCBs] to show how even minor chemical differences can produce very different effects,” says Timothy S. Gross of the University of Florida in Gainesville. Just as combinations of PCBs may prove synergistic, he adds, so may the many types of structurally different hormone-mimicking pollutants — such as dioxins and DDT — that can contaminate an ecosystem.

Bergeron’s data don’t indicate the reproductive implications for turtles of PCB-feminized gonads. However, Gross says that data from the DDT-feminized red-bellied slider turtles he’s studying “are beginning to suggest that such intersex animals are not reproducing.”

## Reversing prairie dogs’ bum rap

Today, America’s five native species of prairie dog, a type of ground squirrel, colonize fewer than 500,000 hectares of U.S. grasslands — less than 6 percent of what they called home just a century ago. Cattle ranchers have argued that by competing for forage and riddling the landscape with burrows that present stumbling hazards, these rodents reduce the livestock productivity of rangelands by 50 to 70 percent. The result: These animals have been exterminated broadly — usually poisoned at federal expense.

But range managers should reconsider the role of prairie dogs, asserts a trio of researchers in the September CONSERVATION BIOLOGY. They cite studies indicating not only that the rodents aren’t a threat to cattle, but that as “keystone” species, their presence is actually essential to the survival of some 170 western vertebrates — among them mountain plover, swift foxes, and endangered black-footed ferrets.

Indeed, Richard Reading of the Northern Rockies Conservation Cooperative in Jackson, Wyo., and his colleagues argue, encouraging range managers to protect the nation’s remaining prairie dogs “would provide educational, biological, and fiscal benefits.” But they warn that efforts to counter the animals’ undeserved reputation as pests will never get far as long as the U.S. government reinforces misconceptions about the prairie dog by continuing to subsidize its poisoning.

## Foul ferns

Just as undercooked meat or fowl can make a meal sickening, so, too, raw or lightly cooked ostrich fern may cause nausea, vomiting, and diarrhea. Though harvested commercially for years in the northeastern United States and in western Canada as a seasonal delicacy, *Matteuccia struthiopteris* seems to be the common element in several outbreaks of food poisoning this past May, according to the Centers for Disease Control and Prevention (CDC) in Atlanta.

At one time, native Americans in eastern North America considered this fern a spring vegetable, one adopted by Canadian settlers in the 1700s, the CDC notes.

Nevertheless, in New York, one restaurant received complaints from about 40 people who ate fiddleheads sautéed for 2 minutes, while no one who ate similarly harvested ferns cooked 10 minutes at another eatery experienced symptoms. Likewise, three outbreaks occurred in western Canada, two at restaurants that also cooked the ferns just briefly.

Health department officials tested uncooked ferns for bacterial and pesticide contamination but found neither. Nor did they track down any other possible causes, the CDC reports in the Sept. 23 MORBIDITY AND MORTALITY WEEKLY REPORT. They conclude that the ferns may contain a toxin that adequate cooking — steaming for 10 minutes or boiling for 15 minutes — destroys.

## Electronic hacking machine

No one likes to cough, especially at night, when hacking keeps an ailing body from getting a good night’s sleep. But the coughing reflex can also save lives, says Elliot Roth of the Rehabilitation Institute of Chicago. It helps keep the lungs clear of fluids, which can impair breathing and become breeding grounds for bacteria. People paralyzed from the neck down lose this vital reflex, and about 20 percent die of respiratory problems, Roth notes.

In September, Roth and Robert J. Jaeger of the Illinois Institute of Technology in Chicago patented a cough stimulator. They expect quadriplegics will be able to use this pocket-size electronic device within the next 5 years.

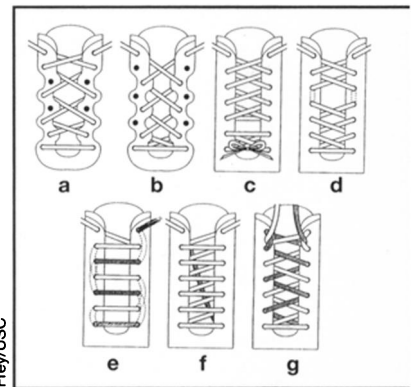
## Lacing up for painless feet

Many people could avoid foot aches if they laced their sneakers and shoes properly from the start and always loosened the ties before slipping a foot in, says Carol Frey of the University of Southern California in Los Angeles. Innovative shoe-tying patterns can also help, the American Orthopaedic Foot and Ankle Society points out in its September newsletter.

People with narrow feet should thread wider-set eyelets for a snug fit (a), while those with wide feet should use eyelets closer to the tongue (b). Two sets of laces, one ending at the bottom, best suit a foot with a wide ball but narrow heel (c). Pull the laces at the top tight to fit the heel, and adjust those at the bottom to fit the ball.

Skip an eyelet if a bump on the top of the foot or a high arch causes pain (d), Frey advises. Also, people with high arches might want to lace shoes without a criss-cross pattern (e).

For hammertoes, corns, or other toe troubles, string one end of the lace from the toe eyelet to the top and pull that lace to lift the front end of the shoe (f). To avoid or relieve heel problems, thread the laces through each other at the top (g).



Frey/USC