# RANDOM SAMPLES

edited by CONSTANCE HOLDEN

## Sociology's "Biophobia"

If sociologists want to prevent the demise of their discipline, they should take measures to counteract its "biophobia," according to sociologist Lee Ellis of Minot State University, North Dakota.

Writing in the summer issue of *American Sociologist*, published this week, Ellis notes that sociologists have been worrying about shrinking enrollments and disappearing departments for some years now. His analysis: "Sociology's loss of majors and its deteriorating image are mainly due to most sociologists still stubbornly insisting, contrary to overwhelming evidence, that biology is not important for understanding human social behavior."

Where does this biophobia come from? Ellis lists several causes, the foremost being that biology has little or no presence in sociology training curricula; also, that sociologists have failed to study social animals other than humans. And sociologists fear the "political and moral implications" of acknowledging biology in behavior, with the result that "today's sociological theories are all exclusively environmentalistic," writes Ellis.

The president of the American Sociological Association, Maureen Hallinan of Notre Dame University, says she believes the decline in sociology enrollments has had more to do with the academic job market than anything else. She says sociologists don't hate biology—rather, they've been "slow to focus on the natural sciences because we're still in the process of trying to understand and conceptualize the opportunities and constraints in interaction with our environment."

But sociologist Frank Salter of the Max Planck Institute for Human Ethology in Germany thinks his discipline takes the cake when it comes to anti-scientific howlers. He points to the *Concise Oxford Dictionary of Sociology*, published in 1994. Compiled by scholars at the University of Essex, the dictionary has no entries for subjects such as behavior genetics, he notes. And it defines "childhood" as "constructed on the inabilities of children as political, intellectual, sexual, or economic beings, despite empirical evidence to the contrary....[This] serves the needs of capitalist states...." Salter says the dictionary would look very different "if there had been just one biologically literate person in that department."

## Dutch Cats Killed by Chicken Mix

Scientists in Holland have finally cleared up the mystery behind an epidemic of acute polyneuropathy that killed and paralyzed hundreds of cats this spring (*Science*, 7 June, p. 1425). The elusive cause was a "pre-mix"—a concoction containing a substance poisonous to cats that the cat food factory accidentally added to its product.

After the epidemic broke out in April, it was quickly traced back to dried cat food from Spillers Petfoods, a factory in the Netherlands. But nailing down the agent of the disaster proved much more difficult. Mycotoxins, bacteria, heavy metals and other likely candidates were ruled out one by one. Finally, on 8 August, Spillers announced that scientists using mass spectroscopy had confirmed the culprit: salinomycin. The substance is ordinarily added to chicken food to prevent coccidiosis, a parasitic gut infection, and to pig food to help the animals absorb their food more efficiently. But the compound is toxic for many animals, including cats, turkeys and horses.

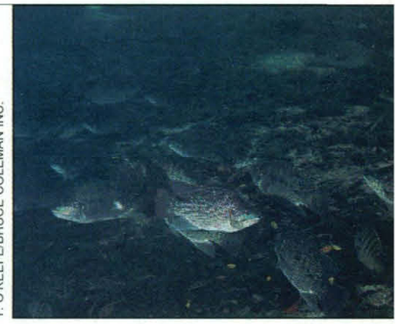
The salinomycin came in a blend of minerals, vitamins and other chemical additives for the cat food that Spiller had purchased from another company. That firm—whose name Spiller won't disclose because it's investigating a possible liability claim—also produces pre-mixes for chicken and pig food, and the ingredients somehow got mixed up. "It took us so long because it was so illogical," says Wil Schreurs of TNO Food and Nutrition Research, the lab that carried out the tests. "We just weren't looking for this compound."

Spillers, which has suffered heavy financial damage from the disaster, has stopped using the pre-mix. Scientists don't believe salinomycin poses any dangers for human consumers of animals fed the pre-mix. But the Dutch health ministry is looking into whether poultry and pork should be tested for traces of the substance.

## MEDLINE Back on Track

A contract dispute that had clogged the keying in of entries to MEDLINE—the online research database of the National Library of Medicine (NLM)—for the past 5 months has been settled, and the NLM is now trying to get on top of a formidable backlog.

Last February, a federal appeals board, in response to a complaint filed by a contractor that had lost a bid to enter data for MEDLINE, ordered the NLM to stop using the winning contractor's services and reevaluate the contract. Volunteers from NLM's staff made a valiant effort to cope with the daily influx of 1700 references, but by late March the database had slipped behind by 30,000 entries (*Science*, 5 April, p. 21). The investigation is now complete; and work resumed fully last week under a new contract with the original contractor, Atlis Publishing Services. Meanwhile, says NLM spokesman Bob Maynard, "This jury-rigged system we've been operating under has actually blossomed to just about being able to keep our head above water." MEDLINE, which now has a backlog of 130,000 entries, hopes to catch up with itself by the end of the year.



T. O'KEEFE/BRUCE COLEMAN INC.

**Bearers of disease?** Tilapia bacterium makes cross-species leap.

## Fish Fans Beware

In the war between people and pathogens, a zoonosis is like a guerrilla attack—a virus or other micro-organism normally found in another animal sneaks into and sickens a human victim. Now it appears that tilapia, one of aquaculture's more popular products, may be a reservoir for a new, potentially dangerous, zoonotic troublemaker. Earlier this month, U.S. and Canadian public health officials documented for the first time that a bacterium that causes meningitis in fish has jumped into humans.

Donald Low of the Mount Sinai Hospital of the University of Toronto and colleagues have isolated the bacterium, *Streptococcus iniae*—which has caused outbreaks of meningitis and encephalitis in fish populations in Texas and Israel—from 6 people in Ontario. The victims were apparently boarded through injuries received while cleaning fish. One developed meningitis and transient arthritis; the others came down with skin or blood infections. The infections can be successfully treated with intravenous antibiotics, the researchers say in the 2 August *Mortality and Morbidity Weekly Report*. Usually a bacterial strain that causes symptoms in one type of host will not affect another type unless it changes in some way, says Low. But in this case, "it's like you have a bacterium that jumped species."

It is not yet clear whether the new cases signal the emer-

*(continued on page 1051)*

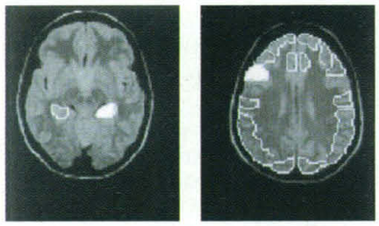
(continued from page 1049)

gence of a new human pathogen, notes Benjamin Schwartz, an epidemiologist at the U. S. Centers for Disease Control and Prevention in Atlanta. But, Low adds, because aquaculture is a booming industry and a promising source of future food supplies, "we may just be seeing the tip of the iceberg" with respect to this microbe's disease-causing potential.

## The Brain as Orchestra

Imaging that shows the simultaneous ebb and flow of neural activity in different parts of people's brains is helping explain the seemingly paradoxical effects of drugs such as Ritalin and amphetamines, say neurobiologists.

When a certain chemical is introduced, it can dampen the activity of some of the brain's electrical and chemical circuits while enhancing others, according to neurobiologist Daniel Weinberger and colleagues at the National Institutes of Health Neuroscience Center at Saint Elizabeth's Hospital in Washington, D.C.



MATTAY *ET AL.*

**Finely tuned thinking.** MRI scans show how amphetamines beef up activity in the hippocampus (l) or the prefrontal cortex (r), depending on the mental task being performed.

Weinberger's team demonstrated this by giving either an amphetamine tablet or a placebo to 8 people and then using positron emission tomography to monitor blood flow—a measure of neural activity—in their brains as they performed two different cognitive tasks. For one task, people were given incomplete patterns and asked to fill in the gaps, a skill known to involve the hippocampus, the brain's longterm memory center. The other task involved matching up the contents of a box on a computer screen with the contents of one of four other boxes. This test involves the prefrontal cortex, says psychiatrist Karen Berman, one of the researchers.

When people had to fill the missing gaps in the pattern, those taking the drug showed a greater increase in activity in the hippocampus than the controls while neural activity decreased in the prefrontal cortex, the group reports in the August *Journal of Neuroscience*. The opposite pattern occurred with the second task. "It shows that [amphetamines] and related neurochemicals not only affect the brain but tune it in a specific way," says Berman, apparently strengthening certain circuits and thereby enhancing the signal to noise ratio. This may explain why Ritalin, an amphetamine-like drug, can help children with attention deficit disorder to concentrate even though it causes hyperactivity in animals.

The experiment "highlights how dynamic the brain is," comments neurobiologist Amy Arnsten of Yale Medical School. Animal studies have shown that amphetamines can exert differential effects at the level of single cells. Now this work shows the process at work at the level of entire brain regions, says Arnsten. "To be able to see that in a living human brain is very exciting."

Weinberger's group plans to do the tests next in schizophrenics to see if these types of substances might help them focus their fragmented thoughts.

### HONED FOR LEADERSHIP

**"Stay active in mathematics [as department chairman]....Being deeply involved with the subject tends to harden the wits and hone the reasoning skills....this makes for a better decision maker. If you are used to attacking difficult mathematical problems and making sharp distinctions between concepts, deciding a tenure case is easier."**

**–from a forthcoming book, *On Being a Department Head* by John B. Conway, head of the math department at the University of Tennessee. Published by the American Mathematical Society**

## NO Linked to Malaria Immune Response

A new biochemical clue may help doctors understand why some people infected with malaria develop deadly brain complications. Scientists from the Duke/Veterans Administration Medical Center in Durham, North Carolina, and the Muhimbili Medical Center in Tanzania, have found a correlation between severe malaria and low blood levels of nitric oxide (NO) in Tanzanian children. The study, published in the August issue of *Journal of Experimental Medicine*, hints that NO—a molecule with a hand in many biochemical processes—plays an important role in the immune response to the parasite that causes malaria.

NICHOLAS ANSTEY

**High NO?** Children, one healthy and one asymptomatic, in malaria trial.

In parts of Africa, mosquitoes infect almost all children with malaria. But only about one child in 1000 develops the deadly cerebral form. The researchers measured biochemical markers of NO in the blood of 191 children, some healthy, some with a mild malaria infection but no symptoms, and some with cerebral malaria. They found that the sickest children had the lowest levels of NO, while infected children with no symptoms had levels elevated above normal, leading researchers to propose that NO might—through some unknown mechanism—help protect against the severest forms of the disease.

Paper coauthor Brice Weinberg from Duke, an expert on nitric oxide, says the result was surprising. Indeed, scientists had theorized that an overabundance of NO, generated in response to a brain infection, could cause the deadly symptoms.

One of the scientists who had proposed that theory, malaria expert Ian Clark of the Australian National University in Canberra, says NO blood levels may not be an accurate measure of its presence in the brain. But he says he finds the results interesting and promising for another reason: the elevated NO levels in the infected but asymptomatic children may yield clues about malaria tolerance.

Weinberg says that while drugs that affect NO levels might provide a rich area for future research, the results are preliminary. He warns: "The potential side effects of such drugs could be serious. We must proceed with caution."