RANDOM SAMPLES

edited by CHRISTOPHER ANDERSON

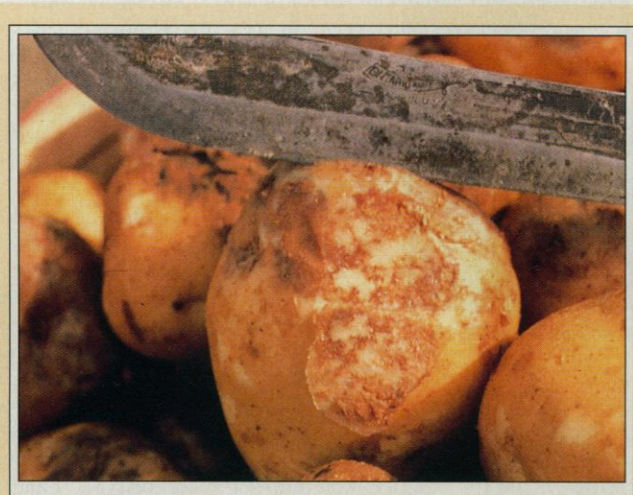
Education Reformer Forced Out

In California, the science educators are worried—and considering the influence the California school system has on other states when it comes to adopting new textbooks, so should scientists across the country, say these educators. On 29 January, state superintendent of schools Bill Honig, one of the state's fiercest advocates for progressive science education, was convicted of criminal conflict of interest for assigning four federally paid school employees to work with a nonprofit education program run by his wife. He faces up to 5 years in prison and cannot hold state office again.

Though some blame political motivation for Honig's removal, even his supporters acknowledge that he showed poor judgment in assigning federal employees to the Quality Education Project. Designed to involve poor parents in their children's education, the program operated from rented space in Honig's home—and Honig paid his wife a salary of $100,000.

His loss is "a real blow for science education," says Eugenie Scott, director of the Berkeley-based National Center for Science Education. Over the objections of conservatives on the state school board, Honig had implemented science guidelines that stressed critical thinking, and he ruled that evolution be considered a central rather than an optional theme in California science courses. By themselves, these actions might have been enough to earn Honig enemies among the religious right, but he also strongly supported sex education and opposed tax breaks for families whose children attend private schools.

Science educators are waiting anxiously for Republican Governor Pete Wilson's choice to serve the 2 years remaining in Honig's elected term. But at least they can rest assured that Honig's reforms are secure for 5 years, now that his so-called California Science Framework has been adopted—by law, the framework cannot be changed in less than that time. "But," warns Berkeley's Scott, "whether it will be as aggressively implemented as it would have been under Honig is another question."



Sick spuds. A new fungus arrives among us.

The Blight o' the Irish

Ever since the fungus *Phytopthora infestans* blighted Ireland's potato fields in 1846, farmers have been duly respectful of the disease. Within a few days after the first brown flecks appear on leaves and stems, "an affected field looks like it has been burned," says Cornell plant pathologist William Fry. Farmers have learned to fight back with fungicides and resistant plant strains, but new variants of the blight that may be resistant to those countermeasures are now on the march, Fry warns.

Variants of the fungus found last year in Washington state and New York, says Fry, are resistant to metalaxyl, the fungicide most commonly used to control the blight. In addition, he says, researchers in South America, Europe, and the Middle East are now seeing a new variant of the fungus that can reproduce sexually with the more common variety. "These recombinants," Fry says, "might be more virulent than forms present today."

With no way to cure plants infected with the metalaxyl-resistant strain, preventive measures may be the only hope for many potato farmers. Fry says growers will have to monitor seed stock closely, adopt resistant cultivars, and use those fungicides that are still effective against *P. infestans*.

Long Live The Lefties

Good news for those in their right minds: Left-handers are not doomed to a shortened lifespan after all, according to a new study. The latest evidence refutes earlier reports that southpaws run a greater risk of death at any age and die on average 9 years earlier than "righties."

A 1991 study in the *New England Journal of Medicine* by researchers at California State University and the University of British Columbia had gone so far as to suggest that "left-handedness may indicate covert neuropathologic features or immune system dysfunction." Selective survival, the authors suggested, might account for their observation that left-handedness falls off from about 13% among 20-years-olds to less than 1% in 80-year-olds.

But now researchers at the National Institutes of Health's National Institute on Aging (NIA) have a new explanation for the sinister findings: bad statistics. Writing in the February *American Journal of Public Health*, the NIA researchers show that the apparently increased "mortality" of lefties is simply an artifact of past social pressures. On the basis of a new population simulation, they attribute the findings solely to a lessening of the demand on more recent generations of lefties to conform to a right-handed society.

And to put another nail in the lefties-die-young theory, the NIA team analyzed data from a 6-year cohort study of some 3770 elderly persons in Boston. Comparing lefties and righties of the same generation, the researchers found no correlation between handedness and mortality.

The Invasion Of Mars

No, this isn't a scene from a 1950s science-fiction classic: In 1997, Russian and U.S. robots are to invade Mars. And in the spirit of post–cold war cooperation, the robots may work together.

Following the tradition of Soviet heavy industry, the Russian representative, known as Marsokhod, will weigh in at 80 kilograms. But the $20 million metal monster is lithe: Boasting titanium wheels that can bend with the contours of the land, it will "flow like liquid over a surface," says Russian project director Pavel Sologub.

The United States, meanwhile,

Pals. Russian robot *(top)* could carry tiny U.S. counterpart.

is banking on strength in numbers. Rocky 4, the Jet Propulsion Lab prototype, weighs just 8 kilograms and could cost as little as $1.2 million a copy. At that price, the National Aeronautics and Space Administration could populate the Red Planet with a whole troop of Rockies.

Okay, so let's team up the U.S. Davids with the Russian Goliath. The idea appeals to some mission planners, such as Garry Rogovsky, first deputy director at the Babakin Engineering Research Center in Russia. He has proposed placing one of the little Rockies "piggyback" on the Marsokhod. The two rovers could traverse the Martian landscape together, stopping here and there to let the David dismount and investigate tight places.

Russians Admit Reactor Dumping

Last summer, environmentalist groups in the West rang alarm bells with allegations that the Soviet military had dumped spent nuclear reactors from submarines and icebreakers in the shallow seas around the Arctic archipelago of Novaya Zemlya (*Science*, 31 July 1992, p. 608). Now, 6 months later, the Russians have confirmed the allegations, but researchers have also found that the discarded reactors probably don't present an immediate crisis.

That was the consensus after researchers gathered from 1 to 5 February in Oslo, at a meeting called by the International Atomic Energy Agency (IAEA). At the meeting, a Russian delegation—in the first official description of the Soviet dumping program—admitted that seven fueled reactors, plus another 10 without their fuel, were scuttled in the Kara Sea, east of the archipelago, mostly during the 1970s.

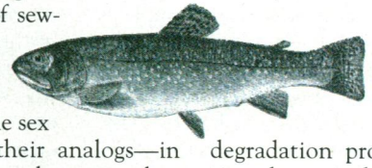
But meeting attendees also heard some good news: Computer simulations conducted by Murdoch Baxter of the IAEA Marine Environmental Laboratory in Monaco show that the pattern of ocean currents away from Novaya Zemlya means that any radioactivity released shouldn't pose a major threat to the world's fisheries.

What's more, the amount of radioactivity being released seems quite low. Water samples collected by a Russian-Norwegian team that cruised the Kara Sea last summer show that cesium-137 levels east of Novaya Zemlya are substantially less than those in the North Sea, west of Norway. To Norwegian team leader Lars Føeyn of the Institute of Marine Research in Bergen, that pattern suggests that Western European nuclear installations, not Soviet dumping, are to blame for most of the contamination.

One remaining question, however, is whether the contamination at the dump sites themselves is more serious. Last year, researchers were allowed no nearer than 50 miles from the shallow bays in which most of the reactors were sunk. Given the low levels of contamination in the general area, Føeyn doesn't expect to find dramatically higher levels at the dump sites. But he hopes to be allowed to see for himself on a second cruise, slated to take place this summer.

Twisted Fish Sex Scare

Britain's rivers—and the wildlife in them—are no strangers to pollution. But now there's a new and insidious threat to consider: gender-bending steroids. Fish downstream of sewage treatment plants, it seems, are being exposed to female sex steroids—or their analogs—in concentrations that can alter their reproductive physiology.



That news comes from researchers at Brunel University, west of London, and the UK Ministry of Agriculture and Fisheries, who have just completed a report outlining the hormone pollution problem in 28 British rivers. The researchers held caged trout in the outflows from sewage works, and at varying distances downstream. They found that blood samples from male fish exposed to the sewage for only a couple of weeks contain a protein called vitellogenin, a constituent of fish egg yolk. Ordinarily, only female fish produce the protein, under the control of the sex steroid estradiol.

The effect was still measurable in males held several kilometers downstream of a sewage outfall, says Brunel fish physiologist John Sumpter. As a candidate gender-bender, he proposes ethynyl estradiol, which is found in the urine of women taking oral contraceptives. Other plausible candidates are the degradation products of common domestic detergents, which have recently been shown to exert weak estrogenic effects.

Sumpter and his colleagues don't yet know if wild fish populations are suffering any real harm from their inadvertent steroid abuse. But freshwater hormone pollution apparently isn't a peculiarly British problem: Sumpter says that French researchers, studying eels in the Seine, are beginning to turn up very similar results.

Third Time's a Charm For Roving Heart

Restless hearts used to be the stuff of country songs. Now, as organs for transplantation run short, they're showing up in medicine as well. Take the third-hand heart transplanted into a 58-year-old man at University Hospital Zurich on 31 December 1991.

The heart had served its original owner for 20 years before his brain death from a self-inflicted gunshot wound. Next in line was a 47-year-old man. Unfortunately, he succumbed 13 days later to intracranial bleeding, but the heart was still in good shape. So the hospital's ethics committee approved a bold procedure: Retransplant the heart into the 58-year-old, who had been waiting more than a year for a new heart.

This time around, the heart seems to have found a good home: "The postoperative course of the second recipient has been uneventful," report the doctors in the 4 February *New England Journal of* Medicine. But they warn that third-hand hearts will likely remain too rare to alleviate the chronic shortage of donor organs.

Industrial Labs Among Physics' Finest

Rank	Name	Papers	Citations	Impact
1.	Institute for Advanced Study, Princeton	1462	25,538	17.47
2.	Xerox Corp.	1619	26,516	16.38
3.	AT&T Corp.	10,340	169,031	16.35
4.	Harvard University	7049	110,760	15.71
5.	Princeton University	5593	85,423	15.27
6.	Univ. of California, Santa Cruz	1541	22,963	14.90
7.	IBM Corp.	8929	127,092	14.23
8.	Univ. of California, Santa Barbara	4583	64,744	14.13
9.	Caltech (including Jet Propulsion Lab)	9160	128,919	14.07
10.	University of Chicago	4781	65,203	13.64

Physical science giants. Three industrial research labs are among the 10 best-performing U.S. institutions in the physical sciences over the past decade, according to a new study by the Philadelphia-based Institute for Scientific Information (ISI). The analysis, which will appear in this month's *Science Watch*, ranked institutions by their average number of citations per paper, or what ISI calls citation "impact." ISI included only articles in physical science journals (physics and astronomy, chemistry, geosciences, math and statistics) indexed by ISI between 1981 and 1991.

Source: Institute for Scientific Information