RANDOM SAMPLES

edited by TRACI WATSON

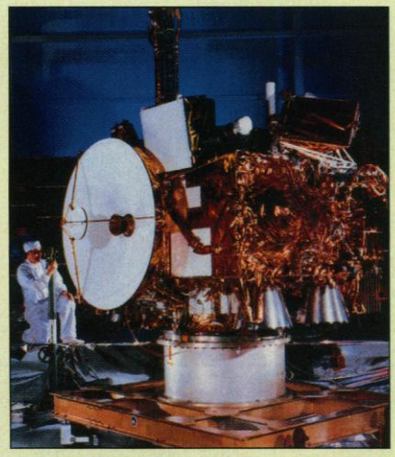
Feds 'Abdicate' Fight Over Toxic Compounds

Toxicology has come a long way in the past 25 years, yet the federal Occupational Safety and Health Administration (OSHA) has now received final word that it must turn back its clock to the 1960s in its efforts to set regulations governing hazardous chemicals in the workplace. Last July, the 11th Circuit Court of Appeals in Atlanta threw out hundreds of exposure standards OSHA drew up in 1989 because, the court said, OSHA's approach to setting those standards was "flawed." And last week, much to OSHA's regret, the U.S. Justice Department declined to appeal the ruling. But the pingpong match doesn't end there.

On the face of it, OSHA will now be forced to revert to 25-year-old exposure limits for about 200 workplace substances ranging from dry-cleaning chemicals to fibers used in industrial insulation. Back in 1968, chemical industry organizations voluntarily set exposure limits for more than 200 toxic substances. OSHA adopted these standards when it was formed in 1971 and added rules for two dozen other substances between 1971 and 1989. But over the past 2 decades, labor unions have argued that many exposure limits were too high and that some toxic substances weren't getting regulated at all. That brings this tale to OSHA's 1989 effort, when it bypassed its usual procedure of setting exposure limits for one chemical at a time—a process that sometimes took years for each substance—in order to catch up with 20 years' worth of health studies.

In one fell swoop that year, the agency issued standards for 428 toxic substances, updating the 1971 exposure limits and adding standards for 164 other substances. But the action failed to appease labor unions and riled trade organizations. As an example of one point of contention, labor groups argued that the exposure limit for perchloroethylene, a chemical used in dry-cleaning, was too high. Industry thought it was too low. Last year, the circuit court could not decide who was right about perchloroethylene and other substances and voided OSHA's entire ruling altogether.

By not appealing, "the federal government abdicates the issue for the time being to Congress," says one OSHA official. And guess what? A bill from Representative William Ford (D–MI) would give OSHA a mandate to do what it tried to do in 1989.



Prepping for waves. Mars Observer readies for launch.

How to Catch a (Gravity) Wave

It's a long shot. But the rare chance to find the first-ever evidence of a passing gravity wave is too enticing for the National Aeronautics and Space Administration (NASA) to pass up.

"The experiment is completely fortuitous," explains astrophysicist John W. Armstrong of NASA's Jet Propulsion Laboratory. Several interplanetary spacecraft just happen to be en route simultaneously: Galileo, bound for Jupiter; Mars Observer, bound for the Red Planet; and NASA and the European Space Agency's Ulysses, bound for the polar regions of the sun. And for a short period this spring all three just happen to lie in the night sky, where radio interference from the solar wind plasma is minimal. Conditions are thus as good as they are going to get for seeing the all-but-imperceptible effects of a gravity wave, a subtle ripple in space-time first predicted by Einstein.

To take advantage of this opportunity, says Armstrong, the antennas of NASA's Deep Space Network will spend 21 March through 11 April beaming a radio signal of precisely known frequency to each of the three spacecraft, which will then reply with a signal at precisely the frequency they received. All else being equal, he says, the signals should arrive back at the antennas showing nothing but a Doppler shift due to the spacecrafts' motion. But if the solar system is being disturbed by a strong enough gravity wave, he says, the signals should also show anomalous frequency shifts as the earth and spacecraft bobble back and forth.

With signals from three separate spacecraft helping to eliminate spurious events, the combination should be capable of detecting gravity waves that shift the Earth-probe distances by no more than a few parts in 10^{16}, with periods as long as several thousand seconds. The most likely source for such waves would be a pair of million-solar-mass black holes in close orbit around one another. So if any such beast exists between here and the Andromeda galaxy—and that's admittedly a big "if," says Armstrong—the spacecraft signals should detect it.

Crafoord Prize Goes to Two Geneticists

An evolutionary theorist, Oxford's William D. Hamilton, and a fruit fly geneticist, Caltech's Seymour Benzer, are to share the $330,000 1993 Crafoord Prize for their groundbreaking research about the influence of genetics on behavior.

Benzer, now 71, has done pioneering work in several fields, including bacteriophage genetics. But he receives this prize, which is awarded annually by the Royal Swedish Academy of Sciences in fields not covered by the Nobel Prize, for his studies on the neurogenetics of *Drosophila melanogaster*, the fruit fly. Benzer mutated flies to act in bizarre ways and then traced the precise tissues and genes that were responsible for the aberrant behaviors. His work paved the way for *Drosophila* to become one of the favorite animals for studying molecular neurogenetics.

Hamilton, 56, also worked with insects but chose a diametrically different tack. He examined a problem that had troubled evolutionary biologists since Darwin: the "altruistic" behavior of social insects such as bees and ants, most of whom sacrifice their own reproductive ability to care for a single fertile "queen." Through evolutionary models, Hamilton showed that social insects forego breeding because they're more likely to keep copies of their genes alive in future generations by caring for the queen.

The King of Sweden will award the prize to Benzer and Hamilton in Stockholm on 28 September.

Leaving the Scene After Victory

Psychologist June Reinisch finally seemed to have things going her way. She'd recently triumphed in a 5-year battle with Indiana University (IU) to keep her position as director of the famed Kinsey Institute for research on sexual behavior—after the university had tried its hardest to usher her out. And she had even wrested a formal apology from the IU president, Thomas Ehrlich, who attributed the university's hostility to "false information" about Reinisch (*Science*, 5 February, p. 759). But no sooner had Ehrlich given her his blessing to stay than Reinisch decided to go: Last week, she announced her retirement.

Reinisch's decision to leave means yet more instability for the 46-year-old institute, which receives substantial funding from IU. The turmoil at the Kinsey

began in 1988, when a faculty review of the institute turned up charges of financial mismanagement and sub-par research. Alarmed, IU officials called for Reinisch to quit. But she refused —and was backed by the institute's trustees. In January, Ehrlich finally withdrew IU's 1988 request for Reinisch's departure.

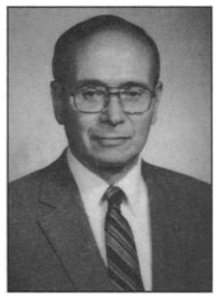
So why leave after such a victory? Reinisch offers several reasons: No one, she told *Science*, "should be a director of an institute like this for more than 10 or 15 years," adding that after heading the Kinsey for 11 years, she had wanted to leave but "couldn't even consider moving on until I had been exonerated." And then there was a more personal reason: In her formal statement of retirement, she said that the long struggle with IU had extracted a "substantial personal cost."

As to the beleaguered institute, trustee Eugene Eoyang, an IU professor of comparative literature, is likely to serve as acting director until a permanent director can be found. Officially, an IU spokeswoman refused to comment on Reinisch's departure or the Kinsey's future.

NAS Director to Move to Carnegie

With 3 months left in his 12-year term as president of the National Academy of Sciences (NAS), Frank Press has announced that he won't have far to move his personal files. Next September, Press will become the first Cecil and Ida Green Senior Fellow at the Carnegie Institution's Geophysical Laboratory and Department of Terrestrial Magnetism, located in Washington, D.C., a few miles from Press' current office. At Carnegie, Press says, he'll be surrounded by people in "my own field of geophysics," and he intends to devote most of his time to writing and speaking on issues that affect science and technology. He'll talk at several college campuses this fall and will spend the summer checking page proofs for his new textbook, *Understanding Earth*.

Meanwhile, Press has sent a farewell letter to all academy members in lieu of giving a final speech. The reason: He'll be in Tokyo the day of the academy's annual meeting, receiving the $400,000 Japan Prize (*Science*, 22 January, p. 461). In his letter, Press takes pride in boosting the number of government requests for academy studies and raising the NAS endowment from $28 million in 1981 to $128 million in 1993.



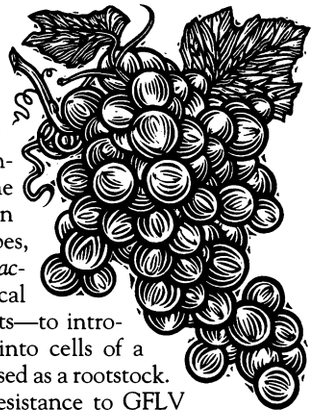
Frank Press

But Press' letter also expresses concerns about the future: As the academy gains influence, he writes, it may begin to draw political attacks. Press also worries that the NRC has reached "a maximum manageable size" and is in danger of becoming too bureaucratic if it grows further. Press says he will propose to his successor, Bruce Alberts, that NAS cut out a layer of management and replace it with oversight committees made up of academy members. "I like this idea," Press writes, "because it anchors the NRC more firmly to the core of the membership."

Bioengineered Bubbly

Purists may shudder at the thought, but by the end of the century the corks could be popping from the first bottles of transgenic champagne. Nine French laboratories have just completed a 3-year, $3 million project to engineer vines to resist the grape fan-leaf virus (GFLV).

GFLV is transmitted by nematodes, microscopic parasitical worms, and is endemic in the soils of many wine regions. The malformation and degenerations the virus causes in vines can result in serious reductions in yield—and at present is tackled using pesticides to control the nematode vectors, and wasteful fallowing of land. But the French researchers, led by Michel Boulay of the Moët-Hennessy-Louis Vuitton plant research center in Colombes, near Paris, have now used *Agrobacterium tumefasciens*—the classical vector for gene transfer in plants—to introduce viral coat protein genes into cells of a hybrid vine variety commonly used as a rootstock.



TERRY SMITH

The precise mechanism of resistance to GFLV isn't known, but the insertion of coat protein genes has been used to engineer disease resistance into a number of plant species. The tricky part, says Boulay, was regenerating plants from the transformed cells. But now that hurdle's been crossed and the French researchers are optimistic that their transgenic vines will remain disease-free in forthcoming trials.

It will take 5 years before these experimental vineyards produce appreciable quantities of wine—and a further 2 to 3 years for secondary fermentation to produce the bubbles that turn the wine into champagne. But how will the wine drinkers view the transgenic brew? Boulay sees no reason why the flavor should change. But he promises a tasting session so experts can judge for themselves before a widespread planting of transgenic grapes on the famed slopes of the Marne Valley.

MREs From Heaven

It sounded ludicrously simple to experts in aerial supply—so simple they hesitated to use it—but no-parachute food aid got the ultimate test last week when food packages began arriving free-fall on Bosnian sidewalks.

This unorthodox method for feeding war victims was suggested by former U.S. nuclear weapons researcher Bill Wattenburg, an ex-Lawrence Livermore physicist turned radio talk show host. No shrinking violet, Wattenburg contacted the National Security Council staff at the White House last month to pitch a notion he'd first hatched 2 years ago, when the United States was involved in Iraq. Back then, he'd told U.S. Army officials that, instead of bundling food in huge, bulky packages and parachuting it to spots easily targeted by hostile soldiers, they'd be better off omitting the parachutes and scattering small, durable U.S. snack packs directly onto trails and fields. Being a scientist, he'd even performed the crucial experiments—dropping granola bars from high buildings and leaving them exposed to the weather. Eureka: They remained intact and edible.

Still, obdurate Army officials passed up their golden opportunity to scatter granola bars for hungry Iraqi Kurds. And that left Wattenburg to wait for his second hearing. This time around, it was only a few days after his call to the White House that U.S. airplanes began using the new technique—which the military dubbed "fluttering"—over the hostage Bosnian town of Srebrenica.

Rather than granola bars, the Army is raining down surplus "Meals Ready to Eat," or "MRE meteors," as one Clinton official calls them. These Army rations may be less tasty and more dangerous than candy bars when airborne, but, says one White House official on background, "they're better than nothing," and certainly better than starving.