RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Scientists Triumph in Beijing Court

A 30-month legal battle pitting China's self-proclaimed "King of the Rat Killers" against a group of scientists who said his commercial rat poison was a dangerous fraud has been resolved in favor of the scientists. It's an unusual case in China, where laws governing product safety are ill-enforced and there are no such things as "expert witnesses."

Qiu Mantan, who is not a doctor but who does purvey "Dr. Qiu's Rat-Luring Potion," initially won a slander verdict in August 1992 against five Chinese scientists who "damaged his reputation" when they published an article charging that his nationally marketed product contained dangerous, prohibited ingredients. Instead of paying the 8000 yuan ($975) fine as ordered, the scientists appealed the verdict, arguing that their charges were based on a rigorous scientific investigation.

This February, Beijing's Intermediate Court overturned the slander verdict in what one of the five scientists called a triumph for the "protection of the dignity of science." Wang Chengxin, deputy director of the microbiology department at the Chinese Institute of Preventative Medicine, says: "We had great support throughout Chinese science circles. Our article was based on good science, and it was correct." According to Wang, tests conducted in 1992 by China's Military Medical Science Research Institute showed that 50 out of 51 samples of the rat poison contained fluoroacetamide 1081, an agent shown to be dangerous to a range of mammals including humans. Wang and colleagues reported those results in their article, published in *Health News*, a Chinese newspaper for health professionals. They also told of numerous cases, compiled by the agriculture ministry, of human and livestock poisoning from "Dr." Qiu's mix.

Wang told *Science* he was asked to serve as a consultant to Qiu during the product's development: "I went to his factory three times. I gave him a lot of advice telling him not to use prohibited ingredients. But he didn't listen a bit."

"This is a monumental case," says China specialist Bill Chang of the National Science Foundation. "The Chinese have not been very good in terms of environmental or public safety issues." And, he says, "this is one of the few cases" where a court has ruled against a company on behalf of consumers. According to the English-language newspaper *China Daily*, some scientists hope this court victory will lead to the establishment of "juries" of experts for cases involving scientific issues.

Researchers as Targets

The mysterious "Unabom" bomber(s) who has been mailing explosive devices to college professors and corporate officials since the late 1970s has now specified the target. In letters to the media delivered on 24 April, the day a California forestry association official was killed by a package bomb, the bomber declared:

"We have nothing against universities or scholars as such. All the university people whom we have attacked have been specialists in *technical fields*. (We consider certain areas of applied psychology, such as behavior modification, to be technical fields.) We would not want anyone to think that we have any desire to hurt professors who study archaeology, history, literature or harmless stuff like that. The people we are out to get are the scientists and engineers, especially in critical fields like computers and genetics. ..."

The goal: "the destruction of the worldwide industrial system."

Diesel Dosing

The noxious fumes spewed by 18-wheelers and other diesel-guzzling vehicles probably do not pose a cancer risk at levels encountered by most people, according to a report released this week.

Epidemiological studies have shown that truckers, railroad workers, and others exposed to high levels of diesel exhaust face a 20% to 50% increase in lung cancer. In 1990, the Environmental Protection Agency (EPA) attributed this to chemicals, such as polycyclic aromatic hydrocarbons, in diesel exhaust.

But a literature review commissioned by the Health Effects Institute (HEI), an organization funded by the EPA and the motor vehicle industry, argues that carbon particles in the exhaust—rather than the chemicals attached to them—are the likely villains. The difference is crucial, as such particles are thought to cause tumors only after large amounts have damaged the lungs over an extended period of time.

The HEI panel, chaired by Gareth Green of the Harvard School of Public Health, concluded that EPA's method of deriving human cancer risk—extrapolating from tumor rates in rodents exposed to high doses—appears to overestimate risk to the general public, because diesel particles don't seem to cause cancer at low doses. "While we can't totally exclude any remaining role for [chemical] carcinogens, the evidence doesn't support that role," says Daniel Greenbaum, president of HEI.

The panel cautions that exposure to extremely high levels of exhaust particles may still pose a cancer risk. And Greenbaum points out that inhaling diesel fumes is still not a wise practice because even low levels of exhaust particles appear to cause cardiovascular or other health problems. "Our society tends to focus on cancer, but we should be looking at the whole range of health effects," he says.

U. OF WASHINGTON

View from the crane. Treetops.

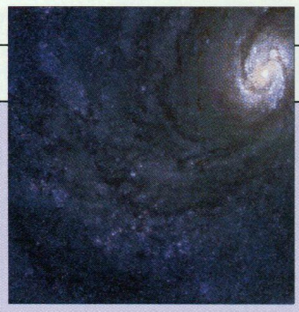
Canopy Open for Business

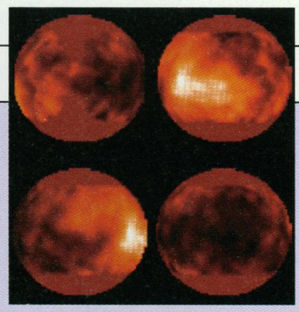
Last week, 10 months after the citizens of Skamania County in Washington agreed to let a giant crane loose in their forest, the crane—a 256-foot-tall mechanical behemoth with an observation gondola dangling from the top—swung into action. The Wind River "canopy crane," designed to give scientists unprecedented access to 6 acres of old-growth hemlock and fir, was dedicated with panel discussions by scientists, rope-climbing demonstrations, and rides in the gondola for members of the media.

The crane is now the third such canopy observation platform in the world. The other two are being operated in tropical forests in Panama and Venezuela. The crane was initially opposed by citizens' groups on Washington's Olympic Peninsula who have suffered from logging cutbacks instituted to protect endangered species. But Skamania County citizens finally decided the project would be an economic boon (*Science*, 24 June 1994, p. 1842).

Several dozen scientists—with projects covering plant and animal biology, ecology, and climate studies—have already applied for crane time, says Professor Jerry Franklin of the University of Washington College of Forest Resources, who is canopy crane program director. The lucky ones—who bring their own research funds with them—will get views of the forest never before available. Because of the varying heights of the trees, "it looks like a mountain range down there," says Franklin.

(continued on page 647)





NASA

Happy Birthday for Hubble

Last week marked the fifth year in space for the Hubble Space Telescope. Since its flawed mirror was repaired in December 1993, it has led a stellar career. Shown here with unprecedented clarity is the spiral galaxy M100 (left), located in the distant Virgo cluster. The photo reveals a rare class of variable stars within the galaxy's spiral arms. Also shown is the surface of Titan, Saturn's largest moon and a body larger than Mercury. The Hubble's cameras penetrated the cloudy atmosphere, providing the first image of Titan's surface, which planetary scientists believe is covered with oceans of ethane-methane. The average temperature: a chilly –289°F.

(continued from page 645)

Scientists interested in getting a piece of the canopy action can contact Franklin by e-mail at jfranklin@lternet.washington.edu

Waterman, Bush Awards

It's celebration time for physicists young and old. The National Science Foundation's (NSF's) prize plum, the annual $500,000 Alan T. Waterman award, aimed at scientists under the age of 35, is going to physicist Matthew P.A. Fisher of the Institute for Theoretical Physics at the University of California, Santa Barbara. And the National Science Board's Vannaver Bush award for lifetime achievement is going to physicist Norman Ramsey, professor emeritus at Harvard and a 1989 Nobel Prize winner.

Fisher, 34, is a theoretical physicist who works on high-temperature superconductivity. He received his Ph.D. in 1986, the same year high-temperature superconductors were discovered, and began his career at IBM, moving to his present post in 1993. He has had a "major impact" on his field, says NSF. He has discovered a new state—the "vortex glass" phase—for superconductive matter. And he has developed a theory to describe how increasing disorder within a material destroys its superconductivity. Fisher, who says he feels "a little bit of guilt" at being showered with wealth at a time when so many colleagues are suffering for lack of funding, plans to put most of the money into supporting postdoctoral fellows at the institute.

Both Fisher and Ramsey will be honored at a State Department dinner in Washington, D.C., on 10 May.

Making Use of Natural Gas

The world's natural gas reserves, unlike its oil, have scarcely been tapped. Much of the 7000 trillion cubic feet of known reserves lies locked underground in remote areas. Tapping into such riches would be costly, however, because it requires building long pipelines—lots of them.

But researchers at Argonne National Laboratory and the Amoco Research Center in Naperville, Illinois, think they may have found a way around this problem. At last month's Materials Research Society meeting in San Francisco, they described a new energy-efficient technique for converting natural gas into a form called synthesis gas, or syngas. In turn, syngas can be easily converted at remote sites into ethanol and other liquid fuels—which can be transported long distances far more cheaply by trucks or ships.

Current techniques for making syngas use a great deal of energy. They involve getting the major constituent of natural gas—methane—to react with oxygen to generate the syngas components carbon monoxide and hydrogen. The oxygen is usually obtained either by steam reformation—vaporizing water so it reacts with methane—or partial oxidation, which involves cooling air to liquefy the oxygen.

The researchers, led by Argonne materials scientist Uthamalingam Balachandran, have developed a technique that doesn't require the intense energy inputs. They use a ceramic membrane heated to 850°C that plucks oxygen from the air and even generates excess heat to make for a self-sustaining reaction. The membrane, forged into a hollow tube, works by passing negatively charged electrons to its outer surface, where they are captured by electron-hungry oxygen molecules in the air. The charged oxygen ions then pass through the membrane, where they react with methane flowing through the tube, generating not only the syngas components but more electrons, which then pass back to the outer surface of the membrane, completing the cycle.

"It's a very interesting demonstration," says Kenneth Poeppelmeier, a chemist at Northwestern University in Evanston, Illinois. "If it works on an industrial scale it could have a large economic impact." The Argonne-Amoco team is now working on building a pilot plant in hopes of tapping this market as well as the underground reserves.

Environmental Knowledge Gap

U.S. citizens only have a middling knowledge of the environment and what affects it, ranking seventh among 20 nations in a poll conducted last year by the University of Chicago's National Opinion Research Center (NORC). Many, for instance, seem to believe that the main cause of species extinctions today is not humankind but cosmic events such as comets and meteorites.

The environment was the subject of this year's International Social Survey, an annual event orchestrated by NORC. About 25,000 adults from 20 countries were given 12 statements and asked if each was true or false. English-speaking nations tended to score the best (Canada was #1 with an average of 7.6 correct answers), with formerly communist countries trailing. Poland came in last with 4.3.

It's familiar news these days that many U.S. citizens don't believe in evolution, and in this poll only 44% agreed that "human beings developed from earlier species." In contrast, 67% of Canadians agreed with the statement. More surprising, says survey director Tom Smith, was that only 63% of the U.S. respondents are aware that "human beings are the main cause of plant and animal species dying out." Smith says that "on every other item, better educated people have more correct answers. But that's not true in the extinction question," in which the U.S. came in 20th. "I think a lot of educated people thought, 'Oh no, I remember the comment about the meteorites and the dinosaurs.' That probably got more coverage than all the rain forest stuff." Japan performed the best on this question, with 87% right.

Smith says participation in the international social survey program is limited because authoritarian governments don't like surveys, each nation has to have the necessary infrastructure to carry it out, and participating nations have to finance the survey themselves. That ruled out all so-called Third World countries except the Philippines—which ranked 16th—as well as most of Asia and all of Latin America.