RANDOM SAMPLES

edited by CONSTANCE HOLDEN

French Researchers Out to Pasture?

A law furtively enacted by the French Parliament in December could force 100 of France's leading scientists to retire up to 3 years earlier than anticipated.

The law, reportedly passed by a handful of deputies in the middle of the night, removes scientists from the list of senior government professionals allowed to work beyond the age of 65. "It shows in what contempt scientists are held" by the French government, said virologist Luc Montagnier, leader of the Pasteur Institute team that first isolated the AIDS virus, at a press conference in Paris on 12 February to protest the new rule. Montagnier and other top scientists are demanding a 3-year suspension of the law and its eventual repeal.

The new law, which applies only to scientists in the giant research agencies such as CNRS and INSERM, would force senior scientists to retire at 65 or 66 rather than the current ceiling of 68. The government, which presents the measure as part of its new research strategy, says the change is needed to make room for younger researchers.

But Montagnier and his colleagues disagree, saying that most of the money saved on salaries will be spent on pensions and that the law may break up dozens of labs whose directors are still active in research. Montagnier himself, chief of a CNRS lab at Pasteur, may have to retire in August 1998 at 66. Pasteur cancer virologist Guy de Thé, 66, says that the Pasteur Institute might not exist if the law had been in effect a century ago: Pasteur was 65 when he founded it in 1888.

Researchers have formed a "Collective for Action and Information" to press their demands. They're not impressed with offers from the CNRS to allow them to continue in an emeritus status with no direct research role. "We don't want to just sit at a desk in the corner and lead seminars," says Montagnier.

Moods and Sleep

Get a head start by rising early—or sleep as little as two more hours—and you may pay the price later in the day, according to a new study by U.S. and U.K. researchers. The report, published in the February *Archives of General Psychiatry*, suggests that small deviations in sleep schedules can trigger significant mood shifts.

Chronobiologists have long known that a person's sense of well-being oscillates along with daily fluctuations in body temperature, hormone levels, and other functions regulated by the brain's circadian clock. It is also known that mood varies according to the length of time a person has been awake. Previous studies, however, "didn't parcel out the effect of each mechanism," says Diane Boivin, a neurophysiologist at Boston's Brigham and Women's Hospital and lead author of the report.

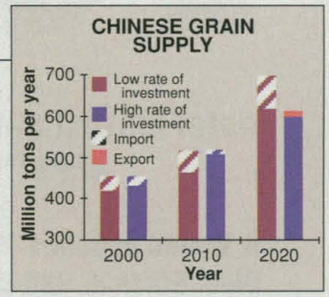
Boivin and colleagues asked 16 male and eight female volunteers to violate their bodies' 24.2-hour circadian schedule by living in isolation chambers on 28- or 30-hour days for several weeks. Although the body's clock can be reset—after jet travel, for example—the cycle can't adapt to such a large difference in day length. This "forced desynchronization" made it possible to gauge the effects of circadian and sleep-wake patterns separately.

The scientists found that subjects' moods brightened or darkened during waking periods according to the difference between their natural and actual waking times. They felt worst between the 6th and 18th hour after waking on days when, according to their circadian clocks, they awoke in the late evening. Says Boivin, "Good synchrony between your waking and your biological clock will allow higher mood levels."

"It's an important study," says psychiatrist Daniel Buysse, of the University of Pittsburgh's Sleep and Chronobiology Center. "It shows that mood is not driven solely by the clock [or by] the duration of wakefulness, but rather, there is a complex interaction between the two." Psychiatrist Ellen Leibenluft at the National Institute of Mental Health plans a similar study using patients with manic-depressive illness. She says: "This could be a road map for manipulating mood."

AMERICAN MUSEUM OF NATURAL HISTORY

Wild ball. A bowling ball bag made from the hide of a zebra head is going on display at the American Museum of Natural History's show "Endangered!" The New York exhibit, "Exploring a World at Risk," features a wide range of oddities to illustrate the various uses of animal products, as well as the need for conservation and ecosystem preservation. Among other attractions: live alligators and a Volkswagen "beetle" encrusted with zebra mussels after 4 months in Lake Erie. The exhibit will run from 1 March to 1 September.



SOURCE: IFPRI

Land of plenty. New analysis foresees no Chinese grain dearth.

China's Grain Future

China's recent shift from being a grain exporter to one of the world's biggest grain importers has inspired a lot of prognosticating about whether the shift will someday put a crimp on global supplies. While a 1995 study from the Worldwatch Institute offered dire warnings of shortages, a new analysis by the International Food Policy Research Institute (IFPRI) in Washington, D.C.,* predicts that China won't disrupt the world grain market after all. The report says imports, now at about 15 million tons a year (about 3% of total consumption), are expected to rise to 24 million tons by 2000 as a result of a reduction in agricultural research efforts in the late 1980s.

Nonetheless, IFPRI sees a rosy future: It notes that grain yields per hectare continue to rise, and predicts that the growth in grain demand will slacken as population growth rates decline, urbanization increases, and people broaden their diets. Mark Rosegrant of IFPRI explains that while production of feed grains for meat-producing animals will rise rapidly, that is offset by a decline in direct grain consumption. If the leadership decides to further expand irrigation and increase agricultural research, especially the development of new strains of wheat, maize, and rice, the report predicts China will again be exporting grain by 2020 (see chart).

In contrast, the Worldwatch

* "China's Food Economy for the Twenty-First Century: Supply, Demand, and Trade."

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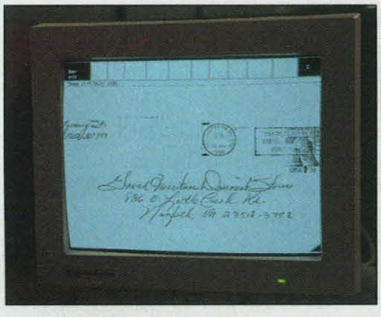
Institute contended that the country is going to become ever more dependent on imports as its population goes from 1.2 billion in 1990 to almost 1.7 billion by 2030, as cropland is covered over by industrial parks, and as water availability declines. But other experts don't buy the estimate by Worldwatch head Lester Brown that China, by 2030, could be importing as much as 200 million tons a year—equivalent to total current annual global grain exports. "Brown is an outlier" among world food prognosticators, says Harvard agricultural economist Robert Paarlberg. While Brown predicts a 20% drop in Chinese grain production between now and 2030, notes Paarlberg, most experts "are expecting a 60% to 90% increase."

Artificial Intelligence Goes Postal

It's not ready to read a doctor's prescription, but a new artificial-intelligence technology developed at the State University of New York, Buffalo (UB), is helping the U.S. Postal Service deliver handwritten envelopes more quickly and cheaply.



U.S. POSTAL SERVICE

Speedy delivery. Computers can decipher handwritten addresses.

A pilot system installed at 34 mail-processing centers across the country last fall can read between 10% and 20% of script addresses, says postal service engineer Edward Kuebert. The system, which saved more than $1 million in labor costs in December 1996, is to be installed at 250 sites by next September, with upgrades that may enable it to read 30% of handwritten envelopes.

Reading handwriting has been an elusive goal for artificial- intelligence researchers, says UB computer scientist Sargur Srihari, who led the project. Machines such as Apple Computer's Newton can translate handwriting by tracking strokes as they are made, but reading script, especially that produced by millions of hands, is trickier, Srihari says.

Srihari and his team narrowed down the computer's chores by developing a program that first deciphers the ZIP code and the street number to "bring down the problem to a multiple-choice question." The program searches a database for street names in the ZIP code that have the given street number and finds a pattern that matches the handwritten word. Several algorithms run at once and check their results against one another.

The ability to interpret handwriting is a "huge step forward" in artificial intelligence, says computer scientist Suen Ching of Concordia University in Montreal. Ching is working on another practical application for it: deciphering handwritten checks.

Who's the Smartest of Them All?

A recent effort to settle the age-old question "Which scientific field has the most intelligent people?" has obtained some very preliminary results. Project Smartypants, initiated last December by "mini-*AIR*," the online version of the *Annals of Improbable Research* (http://www.improb.com), asked readers to rank academic disciplines according to the intelligence of their members and to comment on the cliché that "physicists are smarter than chemists, and chemists are smarter than biologists."

Physicists won hands down. The tally of 46 respondents—a dozen of them in physics-related fields—reveals that 40% rated physicists as the most intelligent. Mathematicians (11% of the sample) were favored by 15%, while chemists and biologists each captured 6% of the top votes. There was a motley assortment of other nominations, including stockbrokers, school custodians, and postmodern philosophers. At the other end of the spectrum, political scientists, economists, and sociologists received votes as least intelligent.

AIR didn't define "smart," leaving room for various interpretations. A Swedish respondent contended that "smart people avoid complicated problems"—which would knock most scientists out of the running. A Texas pharmacology professor defined the smartest people as those who "go where the most money can be made." He put biologists first and physicists last. Others felt engineers had the most mental firepower. "Engineers have to be smarter, because someone has to apply the abstract principles found by chemists and physicists and do something useful with them," noted a chemical engineer.

Critics were quick to identify flaws in the study, including the small and physicist-loaded sample. And as one respondent pointed out, the central question needed refinement: "Is it 'Which field has the most people with intelligence?'—i.e., the largest quantity of nonmorons—or 'Which field has people with the greatest intelligence?'—maybe one or two lights in an otherwise dark area?"

AIR investigators promise to employ more rigorous polling techniques in the future. Says *AIR* Editor Marc Abrahams: "Rocket scientists and brain surgeons were apparently too smart to respond to our original inquiry."

Web of Addiction

Some psychologists believe spending too much time online can lead to a clinically diagnosable Internet "addiction." And several are offering counseling specifically for people who are inextricably tangled in the World Wide Web.

Internet addiction may be vying with carpal tunnel syndrome on some campuses. Last year, in response to problems showing up in growing numbers of patients, psychologist Maressa Hecht Ozarck founded Computer Addiction Services at the Harvard-affiliated McLean Hospital in Belmont, Massachusetts. And at the University of Texas, Austin, psychologists Kathy Scherer and Jane Morgan Bost have found that students who come in for counseling at the mental health center often have Internet habits they can't kick.

Scherer and Bost did a survey of students last year and found that of 387 who said they log on at least once a week, 13% met criteria for addiction, including tolerance (requiring longer periods of time to achieve satisfaction) and withdrawal (depression, moodiness, or irritability when off-line).

The problem is not confined to campuses. From an Internet-based survey of Usenet groups conducted last year, psychologist Kimberly Young of the University of Pittsburgh, Bradford, has identified 400 people she describes as "Internet dependent." Women made up 60%, and averaged 43 years of age, compared with 29 for the men. Dependents averaged 38.5 hours a week online, largely in "chatrooms," where there are people available to talk with around the clock.

Young says that like alcoholics, many in her sample had tried unsuccessfully to quit. Some threw out their modems, then bought new ones. Like other addicts, they reported that their compulsion also interfered with work, finances, and relationships.

Therapists say the phenomenon is still too new to know if it would fit the mold of other recovery programs such as Gamblers Anonymous. Bost says that at Texas, out-of-control Internetters are taught techniques such as keeping schedules of net use, limiting sessions with a timer, and reserving recreational use as a reward for work done.

Not everyone is willing to add the Internet to the list of addictions. Shirley Hill, a psychiatrist at the University of Pittsburgh, says the term should be confined to substances that are known to create physical dependency.

Young lists her criteria for Internet addiction at http://www.pitt.edu/~ksy/.