RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Questions About French Cancer Fund

In France, the biggest name in cancer research is Jacques Crozemarie. Crozemarie never puts on a lab coat—rather, he is president of the Association for Cancer Research (ARC), a private charity that raised more than $100 million last year. That makes ARC, which gives money to more than 2000 French research groups, the largest single supporter of French cancer research, supplying about 1/3 of the roughly $200 million spent annually (two government agencies each kick in about 25%). And it makes Crozemarie a frequent target for critics who believe he wields too much influence over research priorities.

Over the past several weeks, his prominence has also made Crozemarie and ARC targets of newspaper stories that charge the organization with some suspicious spending habits. Front-page stories have included suggestions that private companies that work for ARC—such as a public-relations firm hired to do fundraising—have reaped excessive profits from exclusive contracts. The publicity reached a crescendo on 2 December, when the French daily *Le Monde* published the text of a confidential government memo written in 1991. The memo summarizes an investigation that was terminated prematurely after Crozemarie obtained a court order to stop it. Written by the head of the inspectorate general for social affairs, the document questions what it says is ARC's high administrative overhead, and claims that some companies have "built their prosperity on the association's business."

Crozemarie has vigorously denied the charges in television interviews and in detailed letters to the press. There is no indication at this point whether the government intends to reopen the investigation. But the immediate concern among scientists is that the charges will dampen the enthusiasm of ARC's 3 million regular donors, forcing the organization to curtail its grants to researchers already reeling from cuts in the government's research budget. Says one ARC grantee, who wished to remain unnamed: "This is what happens when the private sector has to take care of research."

E. R. LEWIS

Seismically aware. Puerto Rican white-lipped frog was the first vertebrate reported to be using the alternative channel.

Vertebrate Vibrations

Many invertebrates, such as spiders and scorpions, communicate seismically by sending vibrations through the earth. Now scientists are learning that seismic communication exists among vertebrates, too. Peter M. Narins of the University of California, Los Angeles, reports that he and his colleagues have found a species of Malaysian tree frog, the females of which tap their toes to attract mates. It's only the second frog to be found to play the vibes: The white-lipped frog also sends out vibrations by hitting his throat sac against the ground."It is becoming clear that seismic communication and sensitivity to whole-body vibrations are more ubiquitous among the vertebrates than had been previously imagined," says Narins, who presented the finding at this month's meeting of the Acoustical Society of America in Austin, Texas.

Narins says he observed a female Malaysian tree frog perched on a reed in a marsh, rhythmically tapping her back feet. "All of a sudden males from the same vegetational mat [would] jump on her. ...We believe it's the [vibrations], not the sound," that spurred the froggy swains on.

That remains to be tested, says Narins, who 10 years ago, with E. R. Lewis of the University of California, Berkeley, found the secret of the white-lipped frog. Narins says he plans to test the Malaysian frog signal by replicating it with a noise-free vibration device and watching how the males respond.

The key to the capacity for seismic communication, says Narins, is a highly developed sacculus, an equilibrium sensor in the ear that, in some animals, also detects low-frequency vibrations. Narins says scientists suspect that not only amphibians but reptiles, which have large sacculi, communicate seismically. And there is evidence that rodents, such as kangaroo rats, which thump their back feet, use seismic as well as acoustic pathways.

What's the point? "It's very noisy out," points out Narins. So little animals that want to talk to one another need to find "underexploited channels" for communication. Daniel Robert, a Cornell University biologist who studies fly hearing, says it looks as though frogs developed the seismic channel so predators couldn't eavesdrop. Says Robert: "Seismic communication relieves them of pressure to compete in the acoustic world and puts them in another sensory ecological channel."

Imaging Alzheimer's

British researchers at Oxford University and Radcliffe Infirmary in Oxford have developed a diagnostic test for Alzheimer's disease based on two types of brain images. They say they can detect Alzheimer's in 90% of cases, some in the early stages.

Currently, the only definitive diagnosis of Alzheimer's occurs at autopsy; existing clinical exams have a false-positive rate of anywhere between 19% and 45%. A recently devised pupil dilation test for Alzheimer's (*Science*, 11 November, p. 973) shows promise, but awaits validation by post mortem examinations.

Oxford neuropharmacologist David Smith and colleagues report on such a validated method in November's *Journal of Clinical Psychiatry*. They used x-ray computed tomography (CT) to look at structural changes in the medial temporal lobe, where most of the ravages of Alzheimer's appear to be concentrated. They also used single photon emission computed tomography (SPECT) to examine blood flow, which reflects metabolic activity, in the parietal lobe. A moderate deficit there is an indicator of Alzheimer's. Both these techniques have been used on their own, but not in combination—and there have been no longitudinal Alzheimer's studies using SPECT, says Smith.

The researchers tested their technique in a 5-year study in which 150 subjects, some healthy and some with various degrees of dementia, were given scans once a year until their deaths. The two tests, Smith and his colleagues found, accurately identified 38 of the 42 subjects with post mortem confirmed Alzheimer's. The tests gave three false positives in 108 non-Alzheimer's subjects.

Further evaluation of the test is needed, but other researchers think the British team is on to something important. "This is very interesting and rather impressive data," says neurobiologist Lars Olson of Sweden's Karolinska Institute, who is working on treatments to prevent the death of neurons in the Alzheimer's brain. Nuclear medicine specialist Rudi Dierckx of the University Hospital of Ghent says the techniques are "relatively simple" and have a potential that is "under-recognized at the moment."

Imanishi-Kari to Leave Tufts

Thereza Imanishi-Kari, found guilty of scientific misconduct last month by the Office of Research Integrity (*Science*, 2 December, p. 1468), "conclude[d] her service as a Tufts faculty member" last week, according to a Tufts statement. Did she go voluntarily, or was she pushed? Neither Tufts officials nor Imanishi-Kari's lawyer, Joseph Onek, is saying, nor would they comment on whether the misconduct verdict led to the departure of Imanishi-Kari, an assistant professor. She will remain as a Tufts research associate until next July. If the embattled immunologist is exonerated of the misconduct findings—which she has appealed—the university says she will be free to apply for a tenured position.

Scholars Defend Bell Curve

The intellectual melee over the book *The Bell Curve* continues to rumble on. So far, most reviews of the book—which argues that society is becoming increasingly stratified according to IQ—have been negative. But now one part of the social science community is staging a counteroffensive. Fifty experts in intelligence research and testing have signed a statement, scheduled for publication the week of 12 December in the *Wall Street Journal*, asserting that "some conclusions dismissed in the media as discredited are actually firmly supported."

Sociologist Linda Gottfredson of the University of Delaware, who drafted the statement, says the research presented in the book represents "the mainstream." The statement summarizes 24 points, some of which are: Intelligence—defined as a "general mental capability" that includes reasoning and learning abilities—"can be measured"; IQ tests are not culturally biased; IQ "is of great practical and social importance"; there is a persistent black-white IQ gap; IQ is substantially heritable; IQ is also affected by environment, but "we do not yet know how to manipulate it to raise low IQs permanently."

While the book's authors, Richard Herrnstein and Charles Murray, went on to prescribe social policy remedies—such as the elimination of welfare—based on this research, Gottfredson's statement tries to clarify the line between science and policy, saying: "The research findings neither dictate nor preclude any particular social policy, because they can never determine our goals. They can, however, help us estimate the likely success and side effects of pursuing those goals via different means."

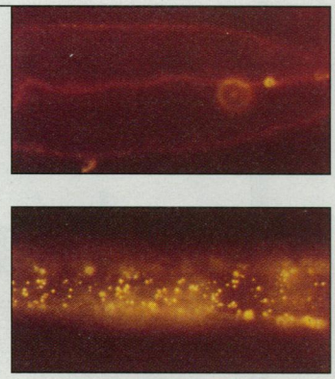
Signatories include senior figures in psychometrics such as John B. Carroll of the University of North Carolina and Lloyd Humphreys of the University of Illinois, Urbana-Champaign; behavioral geneticists including Robert Plomin of Pennsylvania State University and Sandra Scarr of the University of Virginia; and veterans of the race-and-IQ wars such as Arthur Jensen of the University of California, Berkeley.

One academic who declined to sign is cognitive psychologist Robert Sternberg of Yale University. Sternberg thinks the statement places too much emphasis on the importance of IQ, but "my main point is I don't think science is done by majority vote."

100% Natural Polyester?

So you love the feel of a cotton shirt but hate the unsightly wrinkles? Hold the iron—a bioengineered wrinkle-resistant cotton may be on the way. The U.S. Department of Commerce is kicking in $1.1 million for a 3-year project at Agracetus Inc., a biotech company in Middleton, Wisconsin, to test cotton from a plant genetically rigged to turn out enzymes that convert simple carbon compounds to linked esters—in essence, a biological polyester or biopolymer.

The genes come from one of several bacterial species that make such biopolymers for carbon storage. The work builds on a breakthrough 2 years ago at Michigan State University, where researchers coaxed the experimental plant *Arabidopsis* to express a bacterial biopolymer throughout its cells (*Science*, 24 April 1992, p. 520). Maliyakal E. John and his colleagues at Agracetus were able to restrict expression of the genes to the fiber cells in a cotton plant. The result: The plant produces cotton fiber with granules of the biopolymer (polyhydroxybutyrate) in its core—cotton that will, it is hoped, stay as smooth as polyester yet satisfy the natural-fiber market.



AGRACETUS

Engineered cotton. Two immature cotton fibers—above, as nature made it; below, from a "bioplastic" transformed plant. Staining shows the polymer granules.

"I think it's very nice," says Chris Somerville, who worked on the earlier project and is now director of plant biology at the Carnegie Institution of Washington in Stanford, California. "The basic idea of making a cotton fiber with a plastic core is novel. But [technically] it's a simple extension of what we've done."

The development project will test the new fiber for stability and try to fine-tune it for commercial use. But the Commerce Department is expecting more than just wrinkle resistance. Agracetus and the Advanced Technology Program that awarded the grant cite the potential for less shrinkage, greater warmth, reduced pollution—the fibers could require less dye than pure cotton—and, of course, "the ability to stimulate economic growth and enhance U.S. competitiveness."

Crème de la Crème (cont'd)

When it comes to producing high-impact papers in the physical sciences, Harvard University rises to the top, according to the Institute for Scientific Information (ISI). ISI has ranked 100 U.S. research universities according to citations per paper in 21 fields between 1981 and 1993. In October it published the top 10 paper producers in the biological sciences (*Science*, 21 October, p. 367); now it's released its rankings of the top 10 in each of 12 fields in the physical and social sciences. In all the 21 fields, the 10 top-performing universities—Stanford, Harvard, Yale, MIT, Caltech, U.C. Berkeley, Chicago, Cornell, Princeton, and U. of Washington—accounted for 101 mentions, or nearly half the total of 210. Notes ISI: "This demonstrates how a few elite institutions are dominant in research across a range of fields."

CITATION RANK IN PHYSICAL AND SOCIAL SCIENCES, 1981–93

(Among universities publishing at least 250 papers)

Field	#1 in citations
Physics	Harvard Univ.
Chemistry	Harvard Univ.
Geosciences	Harvard Univ.
Mathematics	Yale Univ.
Psychol./Psychiat.	Carnegie Mellon
Astrophysics	Harvard Univ.
Engineering	Brown Univ.
Econ. & Business	Univ. of Chicago
Materials science	U.C. Santa Barbara
Computer science	MIT
Law	Univ. of Chicago
Education	Univ. of Michigan