RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Mental Health Turmoil

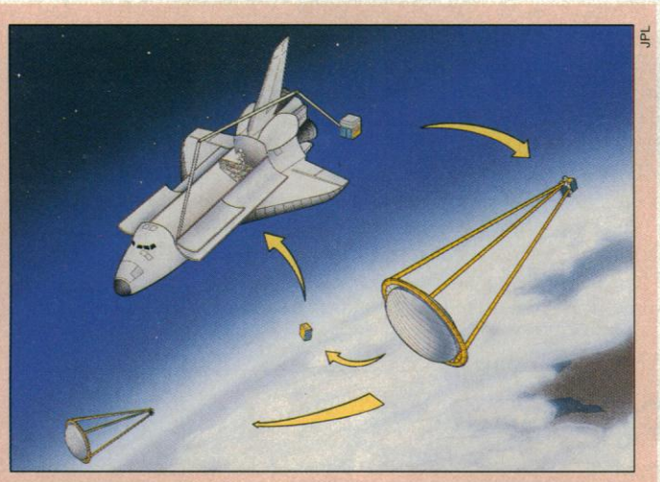
Three mental health advocacy groups have issued a scathing denunciation of "a systematic and progressive dismantling of clinical research related to schizophrenia and bipolar disorder" by the U.S. National Institute of Mental Health (NIMH).

The 2 November statement—from the National Alliance for the Mentally Ill (NAMI), the American Psychiatric Association, and the Public Citizens Health Research Group—follows last spring's memo from 11 senior NIMH scientists alarmed by acting Scientific Director Michael Brownstein's intentions to make what they called disproportionate cuts in clinical research budgets (*Science*, 6 May, p. 764). Schizophrenia and bipolar disorder—manic depression—are at the heart of these.

According to statistics collected for Public Citizen by psychiatrist and NIMH "guest" researcher E. Fuller Torrey, current plans will lead to sharp personnel reductions and a loss of more than 60% of research beds by mid-1995. The advocacy groups say cuts planned for five intramural groups—including the neuropsychiatry, biological psychiatry, and experimental therapeutics branches—would reduce their scientific staffs by 40% by mid-1995. "The clinical research program is going to be destroyed if things keep going in the direction they're going," says Richard Wyatt, who heads the neuropsychiatry branch.

NIMH has defended itself in a statement from acting Director Rex Cowdry that points out, for example, that some projected staffing cuts only reflect transfers, and insists that "NIMH values highly ... information and insights" from concerned outsiders.

But advocacy groups have never felt so frozen out of the process, according to Laurie Flynn, head of the 15-year-old NAMI. "We felt we had to address this more publicly because private conversations have not yielded a thing," she says.



JPL

Space inflation. Antenna will be launched from an experiment platform carried by the space shuttle, which will recapture the platform after the antenna has been cast off.

An Antenna in a Can

In May 1996, NASA, the U.S. space agency, plans to make its own contribution to the inflationary universe by puffing up the largest-ever radio antenna in space. The antenna will be deployed by space shuttle astronauts as part of the NASA In-Space Technology Experiments Program (In-STEP). The aim, says project manager Bob Freeland, is to demonstrate the "feasibility of big, cheap, light, and reliably deployed [antennae which] have a good enough shape" (the antennae must hold their parabola shape to within 1 millimeter).

The Jet Propulsion Laboratory in Pasadena and L'Garde Inc. of Tustin, California, are cooperating in the venture. The 14-meter-diameter "mirror," a reflecting membrane of aluminized mylar, will be supported by an inflated ring, held over an experiment platform by inflatable 28-meter struts. The antenna will take only minutes to deploy, with a canister of nitrogen opening and pressurizing the struts, support ring, and antenna sequentially.

Inflatable antennae have attracted interest among space researchers planning interstellar robotic missions (*Science*, 14 October, p. 212). Current scenarios, though, call for even lighter antennae than L'Garde's, which weighs 115 kilograms. The only comparable case of automatic deployment so far was conducted in February 1993 when the Russians put up a 20-meter sunlight-reflecting mirror, which was unfolded like a fan.

Real-World Materials

The National Science Foundation (NSF) is reorganizing its network of university-based materials research centers in an effort to tie in more closely with U.S. industrial and educational needs.

In place of 10 Materials Research Laboratories and 16 Materials Research Groups will be about 25 new Materials Research Science and Engineering Centers (MRSECs). Although many of the former labs and groups will now be MRSECs, NSF officials say the new program, budgeted at $40-plus million a year, is more than just a name change. It will strongly emphasize links with industry as well as precollege and undergraduate education. Typical of the new thrust is a collaboration between scientists at the Massachusetts Institute of Technology, Du Pont, IBM, and AT&T Bell Labs that will integrate minority student training and undergraduate research into several research programs including the exploration of high-temperature superconducters and novel electronic materials.

The first 11 MRSECs were named in late September; the rest will be selected over the next 2 years.

Smart Music

Can music enhance brain function? Last year, researchers at the University of California, Irvine, reported in *Nature* (14 October 1993) that listening to a Mozart piano sonata briefly improved spatial skills in a group of college students. This year, the group has what they consider a more significant finding: that music lessons led to a sustained improvement in certain spatial skills in young children—suggesting that both functions exercise the same brain circuits.

The researchers, led by psychologist Frances Rauscher and neurobiologist Gordon Shaw, are testing the idea that musical cognition and some spatial functions—which have in common the development of patterns over time—use much the same cerebral hardware, or "inherent spatial-temporal firing patterns." So practicing using one set of functions might facilitate the other.

While the effect in the college students was temporary, Shaw says the researchers figured that "if you start at an early age when the brain is very plastic," musical training might enhance some spatial skills over the long term. The latest study, described at the annual meeting of the American Psychological Association in August, involved 19 3-year-olds who were given 8 months of music lessons, including individual instruction and group singing. They and a control group of 14 preschoolers took five spatial tests before and during the test period. Neither group's performances changed on four of the tasks, but on one, "object assembly" (putting a puzzle together), the musical group showed a "dramatic" score increase. Shaw says that's just what was predicted, as

that was the only task requiring the ability to visualize the development of a pattern.

Harvard psychologist Howard Gardner, who has posited that the brain has a number of independent "intelligences," calls the research "very provocative." He notes that the findings could challenge his theory that musical and spatial abilities are independent, and wonders if it's "the music per se that's bringing about these higher performances" or whether any complex discipline, like karate, might do the trick.

That's a question the researchers plan to address. They are now doing a follow-up with a larger group of 3-year-olds. This time the control group will get individual instruction on computers.

Radio Science Gets More Air

"Kinetic City Super Crew," a new radio science show for kids, has hit the big time. The half-hour weekly show, produced by the American Association for the Advancement of Science (publisher of *Science*) and launched early last month, has been taken on by Radio AAHS (pronounced "Oz"), a children's network based in Minneapolis. It will be broadcast three times weekly on 17 AAHS stations around the country—on Sundays at 9 a.m. Central Time, 7 p.m. Wednesdays, and 5 p.m. Saturdays. The show also airs on three non-AAHS stations, in St. Louis; Portland, Oregon; and Pendleton, Indiana.

The show, which executive producer Robert Hirshon says is the first kids' radio science drama, is subsidized by a 3-year grant of $3 million from the National Science Foundation.

Mouse Model for Tay-Sachs

The inherited neural disorder known as Tay-Sachs disease strikes with wrenching cruelty: No treatment exists, and its victims die by age 5. Researchers believe enzyme replacement or gene transfer could help Tay-Sachs patients, but they have lacked an animal model on which to try out these ideas. Now scientists at the National Institutes of Health have created what they claim is the first reported mouse model to carry some characteristics of the disease.

The Tay-Sachs gene—carried by one in 300 people and one in 30 people of Eastern European Jewish descent—has mutations in the code for an enzyme, beta-hexosaminidase A. Without the enzyme, a molecule called ganglioside builds up in the central nervous system, causing progressive mental and motor damage.

A team led by molecular biologist Richard Proia of the National Institute of Diabetes and Digestive and Kidney Diseases reported last month in the *Proceedings of the National Academy of Sciences* that it has used recombinant DNA technology to disrupt the gene that codes for the enzyme in mouse embryonic stem cells. The engineered mouse, like children with Tay-Sachs, stores ganglioside in its neurons. Unlike the human victims, however, who show the first signs of the disease at 6 months, mice tested at 3 to 5 months had not yet shown any neurologic deterioration.

Still, the mice "are valuable" for studying the biochemical and morphological progression of the disease and to test treatments, says Feige Kaplan, a Tay-Sachs researcher at McGill University in Montreal. She notes that mouse models for some other diseases—cystic fibrosis, for example—display only some signs of the disorders in humans. Proia's lab has begun a cellular therapy experiment with the mouse, and he's received requests for the animal from several other Tay-Sachs labs.

What's in a Binomial?

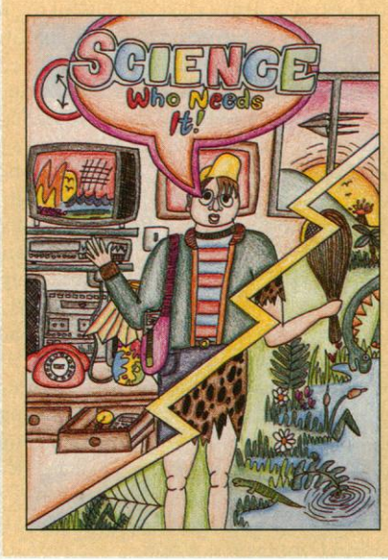
When the Swedish botanist Carl Linnaeus introduced his binomial system of scientific names for plants in 1753, it quickly caught on as the best approach to nomenclature since, well, Adam. But how did Linnaeus latch on to the idea? A Harvard historian of science thinks his system, like many science innovations, originated in a graduate student project.

Before Linnaeus, plants and animals were known by lengthy and cumbersome descriptions. The spearmint, for example, was called *Mentha floribus spicatis, foliis oblongis serratis* (mint with flowers in a spike, leaves oblong serrated). Linnaeus reduced that to a single specific name (*spicata*), and a generic name (*Mentha*). In wading through the archives of the Linnaean Society of London for her dissertation, Lisbet Koerner found where the idea probably took root: in a project Linnaeus describes in a short work on Swedish animals published in 1749 called *Pan Svecicus*. In it Professor Linnaeus and his graduate students tackle a very practical problem: what's the best fodder for farm animals. Each student was assigned a cow, pig, or goat. "Clutching goose-feathers, scrap papers, and ink pots, each student then tracked their animal ... around the meadows as it foraged or grazed, writing down throughout the day the plant species it ate," Koerner writes in a piece to appear in a forthcoming book, *Cultures of Natural History*. Under these conditions, the elaborate names gave way to a two-part shorthand for the 850 fodder plants the group identified. Four years later, Linnaeus's scholarly *Species Plantarum* gave binomial Latin names to 5900 plant species, and the system took hold. Linnaeus eventually coined names for 7700 plant species and 4400 animal species, including *Homo sapiens*.

Koerner's own graduate student project launched her career, and she is now at work on a biography of the botanist. Although he is best known for his taxonomic work, 95% of his work concerned economic issues. "The whole vast output of Linnaeus has not been closely looked at," she says. Despite his influence, "he's a very underresearched scientist."

THE BETTMAN ARCHIVE

Great abbreviater. Carl Linnaeus.



Science Underground. The subways of London and Paris are being blanketed with posters made by schoolchildren—including the man with and without science shown here, by Thomas Meredith, age 13—in celebration of the second annual European Week for Scientific Culture, which begins on 21 November. The British Association for the Advancement of Science devised the project. Six posters each from British and French schoolchildren were selected in parallel competitions.