RANDOM SAMPLES

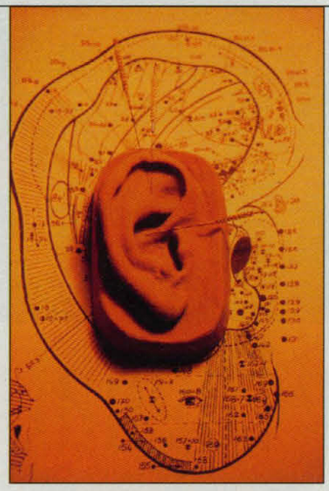
edited by CONSTANCE HOLDEN

Thumbs Up for Acupuncture

After decades of being largely spurned by the U.S. medical establishment, acupuncture seems to be getting respectable. Last year the Food and Drug Administration took the "experimental" label off acupuncture needles as medical devices. And last week the National Institutes of Health (NIH) held its first consensus development conference on acupuncture. The expert panel concluded that acupuncture is effective against nausea and some pain, and encouraged more research on the subject. The data supporting acupuncture, noted panel chair David J. Ramsay, president of the University of Maryland, Baltimore, "are as strong as those for many accepted Western medical therapies."

About 1 million people a year get needled, either manually or with electro-acupuncture, by some 10,000 licensed U.S. acupuncturists. The most common applications are for pain relief and drug addiction.

The panel, assembled by NIH's Office of Alternative Medicine—which has sponsored some $2 million worth of acupuncture research since 1993—featured reviews of research on pain, nausea, ovulation, respiratory and digestive problems, paralysis, and addiction. Although finding that most studies lack controls or are otherwise inadequate, the panel saw "clear evidence" that acupuncture can relieve nausea from operations and chemotherapy, and perhaps morning sickness. It also noted "evidence of efficacy" for postoperative dental pain, and some "reasonable studies" showing pain relief for other conditions.



WORLD VIEW/IGNO CUYPERS/PHOTO RESEARCHERS

Pricked ear. Auricular points are used to treat drug addiction.

How does acupuncture work? Eastern theory holds that it balances the body's energy flow, or Qi. Western experts say it triggers the production of various chemicals including pain-killing endorphins, calming endogenous benzodiazepines, and mood-lifting serotonin. "The challenge," said Ramsay, "is to integrate the theory of Chinese medicine into the conventional Western biomedical research model."

That was music to the ears of practitioners, who made up the bulk of the audience at the meeting. But some others not invited to address the panel claim there's little mystery to acupuncture. George Ulett, a psychiatrist and neurologist at the Missouri Institute of Mental Health in St. Louis, says he has found that electrical stimulation (not necessarily with needles) of "motor points"—where nerves enter muscle—is "a very simple technique" for stirring up neurohormones. And, he says, no ancient Chinese philosophy is necessary.

ROB RUTTEN

No vacuum here. Dutch "open" solar scope.

Telescope on Stilts

A revolutionary solar telescope caught its first rays 31 October at the Roque de los Muchachos Observatory on La Palma, Canary Islands. The 45-cm Dutch Open Telescope (DOT) could open the door to bigger solar optical telescopes by eliminating the need for putting the telescope mirror in a vacuum to prevent heat from distorting the image.

The $2.5 million DOT, built by Utrecht University and Delft Technical University, should give astronomers a view of the sun rivaling that of the finest ground-based optical telescopes. The reason: a novel design to deal with the tremendous heat load from staring at the sun, which creates an image disturbance like the shimmering mirage sometimes seen on a hot highway.

This problem is usually avoided by putting solar scopes in a vacuum tube where there's no air for temperature fluctuations. But, says Jacques Beckers, director of the U.S. National Solar Observatories at Kitt Peak, Arizona, the window covering the opening of a vacuum scope can't be more than about a meter across, the size of the largest available optical-quality windows. To discern, for example, minute changes in the sun's magnetic field, solar astronomers need bigger instruments.

To get past that limitation, chief DOT engineer Rob Hammerschlag of Utrecht University came up with a disarmingly simple design which his team believes will do away with problems posed by both heat turbulence and ground-level atmospheric turbulence. They mounted the DOT mirror, domeless and tubeless, on a rigid 15-meter tower and left it uncovered, to be cooled by wind.

The DOT "will break new ground" if it works, says Beckers, showing the viability of technology "that will allow us to go to larger facilities." Indeed, Hammerschlag hopes within a year or two to replace DOT's 45-cm mirror with a 70- or 80-cm mirror, which would boost the instrument's resolution by at least 50%. Regular observations

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White House Pass?

Psychiatrist Susan Blumenthal was expected to show up last week at the White House to begin her new job as senior presidential adviser on health issues. But the controversial former director of the Office on Women's Health at the Department of Health and Human Services (HHS) didn't appear—and her absence is prompting speculation that women's health advocates who opposed Blumenthal are sandbagging her appointment.

Four advocacy groups led by the National Breast Cancer Coalition—which have long complained that Blumenthal has diverted money from peer-reviewed research to promote her own office's agenda—have asked White House officials to reconsider the appointment. The *Chronicle of Higher Education* also related that the HHS inspector-general is looking into allegations that Blumenthal sought to take credit for work done by independent researchers under a government contract (*Science*, 10 October, p. 227). Blumenthal has called the attacks both "politically motivated" and the result of a "personal feud." An HHS spokesperson refused to comment when asked about the inspector-general's inquiry.

Blumenthal's place of employment, meanwhile, is unclear. According to White House spokesperson Ann Lewis, Blumenthal is "on vacation for a couple of weeks," but has a desk waiting for her in the White House. At present, HHS says Blumenthal has a billet as acting chief of staff under the surgeon general in HHS's sprawling warren in Rockville, Maryland.

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are to start next spring. Becker, meanwhile, is now heading a feasibility study for an instrument that would dwarf DOT—a 4-meter open solar telescope.

Resolving Into a Jam

As every motorist knows, traffic jams have an infuriating way of starting for no apparent reason. But after scrutinizing a notoriously choked stretch of autobahn, two German researchers think they understand why even a minor slowdown on a packed highway can trigger gridlock: It's like a phase transition in chemistry. The findings, to appear shortly in *Physical Review Letters*, could lead to more accurate highway traffic predictions.

Back in 1975, Joseph Treiterer of Ohio State University in Columbus suggested that traffic flows can resemble phase transitions—changes of state such as the condensing of steam into water. That idea has now been refined and extended by Boris Kerner of Daimler-Benz in Stuttgart and Hubert Rehborn of Heusch/Boesefeldt, an intelligent transport systems firm in Aachen, Germany, who used data from magnetic induction loops—thin strips that count cars and measure their speed—in a three-lane stretch of highway near Frankfurt. From this, the duo described three states of traffic: "free flow," in which drivers can easily change lanes and pass; "synchronized flow," where cars are moving but can't pass; and jams.

Kerner and Rehborn found that surges of vehicles joining a traffic flow caused enough disruption almost instantly to transform the flow from free to synchronized. The change caused by even a brief disturbance could last hours. Kerner says this is analogous to the behavior of supercooled steam, in which a single molecular "seed" can prompt millions of molecules to condense into water. A traffic "seed" could be a sudden rush of drivers on an entry ramp, or a temporary slowdown by rubberneckers. The researchers found that once synchronized flow is established, traffic volume had to dip to about 50% of pretransition levels for free flow to resume—again analogous to laws of the water-steam cycle.

The findings could be used to help develop traffic forecasting and intelligent transport systems, Kerner says. Incorporating phase transitions into traffic simulations will be "a real challenge," warns Stefan Krauss, a traffic researcher at the German Aerospace Center in Cologne, but the new work suggests that such models might be used to forecast things like road capacity.

WALDEMAR JOCHELSON/AMNH

Northern rites. A Koryak shaman beats a drum in this photo taken around 1900 by a member of the Jesup North Pacific Expedition, run by New York's American Museum of Natural History. An exhibit on the expedition, which was led by Franz Boas, opened on 14 November.

Satellite Network for Ecoknowledge

Environmental scientists around the world acquired a new resource last week with the handover of a European Space Agency satellite system to the United Nations Environmental Programme (UNEP). The network should be particularly valuable to researchers and managers in regions where phone lines are unreliable.

A result of the 1992 Earth Summit, Mercure has been developed over the past 3 years with $13.5 million from six countries. Any institution with a satellite dish linked to a ground station in a UNEP partner country can tap into the network. Sixteen countries, from Austria to Vietnam, are already plugged in; 11 more have expressed interest, UNEP says. Participants can freely access remote-sensing images, reports, and other information in UNEP databases, and engage in e-mail and teleconferencing. Users will also have a stable Internet link (Mercure's Web address is www.estec.esa.nl).

Mercure is a "showcase" for how bodies like UNEP can link people, says Helge Onsrud of the Norwegian Mapping Authority, chair of Mercure's governing board. The network will facilitate rapid data transmission during environmental emergencies. And if Indonesia were hooked up now, notes Onsrud, local officials dealing with the haze from forest fires now choking the country could quickly download satellite images of affected areas.

Herbal Contraceptive in the Works

Because of its ability to kill many things including insects, viruses, and sperm, the neem has been called the "wonder tree of the tropics." Now it may soon be the source of the world's first widely used herbal contraceptive. Scientists at India's Defence Institute of Physiology and Allied Sciences (DIPAS) in Delhi this month licensed the formulation for making neem oil as a female contraceptive to Siris Ltd., a pharmaceutical company in Hyderabad.

Indians have long put neem oil in the soil and on their bodies to ward off nematodes and infections, says DIPAS reproductive physiologist Govindaswamy Ilavazhagan. And women in the state of Tamil Nadu use cotton soaked in oil as a spermicide.

The new refined version, made of an undisclosed compound called NIM 76, has been found effective at killing sperm in rats, mice, rabbits, and monkeys. And in a 3-month trial in 10 young married women, use of the formulation as a cream or suppository prevented pregnancy and resulted in "no vaginal irritation," says DIPAS director William Selvamurthy. NIM 76 also kills fungi and bacteria, so it should also reduce vaginal infections, he says.

Experts are looking forward to seeing NIM 76 pass some final hurdles. "Only large-scale, multicenter field trials" will prove its worth, says Jeffery Spieler, research chief in the population office of the U.S. Agency for International Development in Washington, D.C. DIPAS and Siris are planning a trial involving more than 2000 women.

If the trial is a success, government approval to market NIM 76 should take about 2 years, says Siris manager Sethuraman Viswanathan. It will be easier to sell, he adds, if scientists can figure out a way to mask neem's unpleasant sharp odor.

Meanwhile, another contraceptive called "Praneem," made from neem and other plant extracts, developed at the International Centre for Genetic Engineering and Biotechnology in New Delhi, is currently in preliminary tests in humans.

TREE EARL SCOTT/PHOTO RESEARCHERS

Spermicidal. Young neem.