RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Job Counseling on the Net

A group that has been helping Russian Ph.D.s find U.S. jobs is now hitting the road—the information highway, of course. The New York City–based Science and Technology Advisory Board, a nonprofit group, is launching an experiment aimed at transferring its job counseling program onto the Internet. "We want to see if we can convert what is a face-to-face process to something over e-mail," says physicist Kevin Aylesworth, a special consultant on the project and founder of The Young Scientists' Network (YSN). The YSN, made up of several thousand unhappily or unemployed scientists, is the first pool of recruits for the pilot program.

The original Scientific Career Transitions Program involves 6 weeks of seminars to groups of up to 20 job hunters who receive guidance in figuring out goals, mapping strategies, role-playing interviews, and analyzing successes and failures. The program was developed by board founder and astrophysicist-turned-consultant and writer Stephen Rosen, who says that over the past 4 years he has helped place more than 500 Ph.D. scientists.

Now Rosen plans to offer the assignments as well as mentoring and group e-mail seminars to clients over the Internet. The selection process has already started, with a questionnaire that asks people how much time they are prepared to devote to the program—and how much money they'd be willing to donate once they get situated happily. "It's a test of their motivation," says Rosen. "We are screening out the tire-kickers." There is also a telephone interview with Rosen, who says, "I like career-changers who have fires in their bellies." Fire-bellied types can contact the group at srosenc@ix.netcom.com.

Rosen emphasizes that it's not easy getting a scientist reoriented—sort of like "moving a cemetery." Many "have entitlement mentalities"—they swept through their educational careers and are baffled at suddenly being wallflowers. And some "are highly, highly introverted" and need basic lessons in people skills, starting with bringing themselves to pick up the phone.

ST. AUGUSTINE HISTORICAL SOCIETY

Wish fulfillment. Dr. Webb on the beach with his giant "octopus."

One Sea Monster Down

A sea monster has vanished under the probing gaze of a modern electron microscope. *Octopus giganteus*, a hypothesized giant octopus that washed ashore in St. Augustine, Florida, in 1896, is nothing more than whale skin.

The gigantic mass was originally found by a St. Augustine physician, DeWitt Webb. Its octopus origins, doubted by many scientists, nonetheless captured many imaginations, and the creature is even cited in a 1995 college textbook called *Marine Life and the Sea*.

But University of Maryland zoologist Sidney Pierce and his colleagues report in the April/May *Biological Bulletin* that the Florida sample, as well as a similar specimen known as the "Bermuda Blob" that washed up in Bermuda in 1988, are "masses of virtually pure collagen." The tissues have neither the biochemistry of invertebrate collagen, as an octopus would, "nor the collagen fiber arrangement of octopus mantle," the scientists write. Rather, they are "large pieces of vertebrate skin."

Pierce says they could tell from the amino acid composition that the Florida mass was warm-blooded—a humpback whale from the size of it—and the Bermuda blob was probably a shark. He says he was hoping to find some DNA to identify the species, but "no cellular structure at all was left."

Pierce is sorry about shattering

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Hot Ants

Mad dogs and Englishmen may go out in the midday sun, but only ants—*Cataglyphis bombycina*, to be precise—are tough enough to do it in the Sahara, where the temperature hits 140 degrees Fahrenheit. Now biologists have learned what makes the ants so tough: the ability to make substances known as heat shock proteins (HSPs), which help protect body proteins from heat damage.

All animals make some HSPs after the damage begins, but ant behaviorist Rüdiger Wehner of the Zoological Institute of the University of Zurich and geneticist Walter Gehring of the University of Basel found that the ants make a pre-emptive strike.

The researchers analyzed HSPs by heating the ants to various temperatures and then grinding them up to extract the proteins. *Cataglyphus*, the scientists found, does indeed produce more HSPs, and can do so even at body temperatures that would kill any other land animal. What's more, the researchers report in the April *Proceedings of the National Academy of Sciences*, the ants actually produce HSPs even before they leave their nest.

D. AGOSTI

Desert survivor. This ant can withstand blistering heat.

"We were not clever enough to think of this," says Gehring, "but the ants were." Mimicking heat shock even before braving the scorching midday sands makes them perfectly suited for life in the desert. Specialized to do their scavenging during peak temperatures, the ants rush out of their nest for just a few sweltering minutes to devour the corpses of insects which have succumbed to the heat.

"Thermobiology is poorly understood," says Donat Agosti, an entomologist at the American Museum of Natural History in New York City, "but this ant will provide more clues." Gehring agrees, and thinks the ant may open a window onto as-yet-undescribed genes that regulate the body's "thermometer."

Newt Gingrich Makes History

House Speaker Newt Gingrich (R–GA), who holds a Ph.D. in history, may need a brush-up course. Writing in a commentary in the 10 April *Newsweek*, Gingrich claimed he does not "hate government," noting that it "does some things very well," such as enabling "valuable research, like discovering the cure for polio."

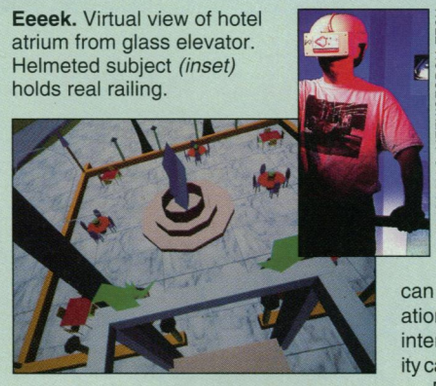
Try another example, Professor. Not only is there no "cure" for polio, but the research that led to polio vaccines was almost wholly funded by the National Foundation for Infantile Paralysis. The National Foundation, popularly known as the March of Dimes, was and is a private organization that raised funds for polio research by having mothers go door-to-door, donation cans in hand. Indeed, in 1953, the National Foundation spent nearly $2 million on polio research, while the National Institutes of Health kicked in only $72,000.

The National Foundation is, in fact, an example of another favorite Gingrich theme: the private sector performing better than government.

Virtual Therapy for Phobias

Psychotherapists used to worry about patients who created their own realities. Now it's the therapists who are creating realities: Scientists in Georgia have used virtual elevators to desensitize people afraid of heights.

"Exposure therapy"—gradually exposing people to the thing they fear—is the accepted treatment for phobias. In the Georgia study, the exposure was done in the lab, using a display, projected on the inside of a helmet visor, that people can manipulate with head or hand movements. Emory University psychologist Barbara Rothbaum and colleagues at Georgia Tech report that when their subjects, 10 acrophobic college students, saw computer-constructed views of elevators and bridges, they experienced the same weak knees, sweating, and other physical symptoms that are caused by the real thing. The video version may look like a cartoon, says Rothbaum, but "when you put the helmet on, within 20 seconds that becomes your reality." After seven weekly sessions of exposure to increasingly frightening heights, anxiety levels in the treated group fell dramatically compared with seven untreated controls, the scientists report in the April *American Journal of Psychiatry*.



PHOTOS BY G. MEEK/GEORGIA TECH

Eeeek. Virtual view of hotel atrium from glass elevator. Helmeted subject *(inset)* holds real railing.

Psychologist Gerald Davison, dean of the Annenberg School of Communications at the University of Southern California, calls the virtual-reality work "intriguing," noting that it's "more real than [mental] imagery" but more controllable than reality. The main drawback he sees is that it can only be applied to physical situations and can't address "complex interpersonal fears," as virtual reality can't yet create plausible humans. But researchers still have lots of other ideas. The group's next project is the treatment of post-traumatic stress disorder among Vietnam veterans. In the helmet will be Army Huey helicopters. Computer scientist Larry Hodges of Georgia Tech explains that the sights and sounds of Hueys "are one of the primary triggers" for the disorder: "Any experience you had began and ended with a helicopter ride."

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the myth: "It would be much more interesting if there was a giant octopus running around there." But Clyde Roper, curator of invertebrate zoology at the Smithsonian Institution, says he's "delighted." Roper, who saw a piece of the Florida specimen 30 years ago and says it was obviously whale, says he has gotten hundreds of inquiries over the years from people who want to believe in the giant octopus. "Now I can send them reprints," he says.

Director for Cape Town Accelerator

South Africa's National Accelerator Centre (NAC), the country's largest national research facility and site of the highest energy cyclotron in the Southern Hemisphere, may not be headed for the chopping block, as many researchers had feared. Some in the government view the center as a luxury in a country with 75% of its citizens living in poverty. But researchers are feeling much better now that a new director has been appointed.

The facility, without a full-time director for the past 3 months, will now be headed by nuclear physicist John Sharpey-Schafer of Britain's Liverpool University. And he's fired up about his new post. "The opportunity to do good science there is tremendous," he says.

The NAC, sited near Cape Town, is home to both a 200-MeV cyclotron, used for nuclear physics studies and for generating medical isotopes, and a 6-MeV Van de Graaff linear accelerator, used for chemistry, materials, and physics research. More than 200 scientists from around the world do work each year at the NAC, which also gives neutron beam therapy to cancer patients.

Scientists have been worried that the facility might be shut down—its annual operational budget currently stands at about R35 million ($9.7 million), equivalent to almost 40% of what the government spends for university-based research. And a recent report by the Royal Society of South Africa hinted that the center might have to be sacrificed in view of other pressing needs. But center leadership is now upbeat, and Sharpey-Schafer thinks the center's future looks "very good—because of its broad base" of activities.

CAREER COUNSELING

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"When I got started [in 1962] one of my chief mentors advised me not to go into science because all the important things had already been discovered."

—Mildred Dresselhaus of MIT speaking on buckyballs (discovered in 1985)

Molecules and Mist

Viewers expecting the standard documentary treatment of science on TV may be surprised when they tune in to the latest show created by producer Adrian Malone (of *Cosmos* fame). The series, *The Nobel Legacy*, makes heavy use of material from the humanities and is designed not so much to "teach scientific facts" as to "encourage people to … think about" science, according to coordinating producer Jane Heifetz of the International Management Group, which funded the series. And it features a commentator—McGill University classics professor Anne Carson—who sees science as a dubious enterprise.

Each of the three shows, which CBS will start airing on 21 April, is hosted by a Nobel laureate: J. Michael Bishop for medicine, Leon Lederman for physics, and Dudley Herschbach for chemistry. While some phenomena—such as the structure of DNA—are accorded the usual graphics, others get treatment by metaphor: For example, Heisenberg's uncertainty principle is presented via a *Hamlet* rehearsal staged in a misty courtyard in Elsinore. Malone's script comes up with some other novel links: Lederman, for example, speaking from the middle of a Hawaiian luau, explains how the four forces (strong, weak, electromagnetic, and gravity) correspond with the human forces of love, anger, sexual attraction, and religious faith. The longest segment in the series features a group of scientists reminiscing about quirky genius Robert Burns Woodward, "the Einstein of chemistry," who, in addition to contributions such as the synthesis of quinine, had the hazardous habit of throwing his cigarette butts in other peoples' lab sinks.

Interspersed with the scientific segments are commentaries by Carson, which include such observations as "physicists generally talk as if knowledge were a form of warfare." Suspicious of the concept of objectivity, Carson says, after describing the fate of the chemist Lavoisier who was guillotined for his devotion to facts: "This happy delusion that there are such things as facts, and that they do not deceive us, underlies the whole progress of science … down to this day."