

## Briefings

edited by CONSTANCE HOLDEN

### NAS Forms Environment Panel

With environmental research one of the hottest tickets in U.S. science, the National Academy of Sciences (NAS) has just appointed a 17-member Committee on Environmental Research to do what many biologists think is long overdue: provide a broad-gauge assessment of the nation's environmental research as well as ideas for enhancing it.

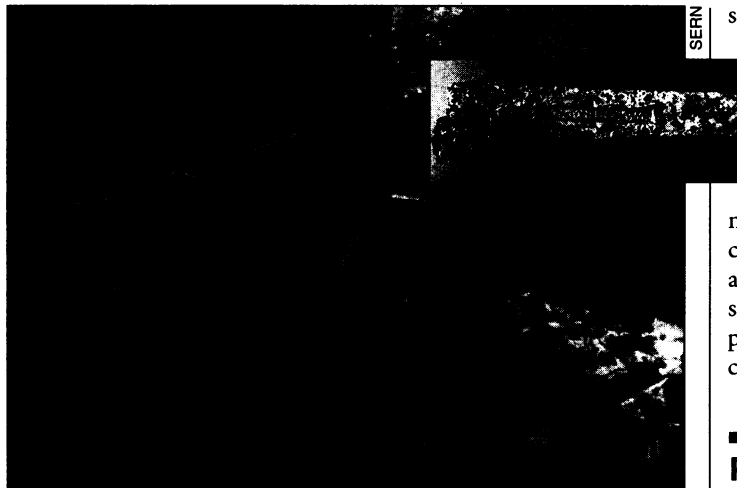
The committee will be headed by biologist Dale Corson, president emeritus of Cornell University, who is famed for leading the presidential committee that looked into the Three Mile Island accident a decade ago. It will pay special attention to a proposal for a National Institutes for the Environment (NIE) modeled on NIH.

The NAS action is the latest development from an unusual grassroots campaign, launched 2 years ago by ecologists Stephen Hubbell of Princeton and Henry Howe of the University of Illinois at Chicago. The two scientists established a Committee for the NIE based in Washington, D.C., and their idea has attracted considerable support in Congress. Last October Congress appropriated \$400,000 to the Environmental Protection Agency so it could fund a study. The NAS has now raised an additional \$200,000 from other federal agencies. A report is due in 15 months.

### Resurrected Lead

In Italy, they say, history is everywhere—even in the state-of-the-art Gran Sasso physics laboratory, a mile deep in the Apennines. There, physicists using supersensitive detectors to search for solar neutrinos, dark matter, and other exotica will be getting a little help from the ancient Romans.

That aid comes in the form of



**Physicists booty.** Lead ingot from Roman freighter.

2000-year-old lead being salvaged from a Roman freighter lying under 30 meters of water off Sardinia. The vessel, which sank between 50 and 70 B.C., carried more than 1000 33-kilogram ingots, which were probably destined for use in water pipes and other Roman civil engineering extravaganzas. The beauty of it today is that, after centuries of radioactive decay, the ingots are almost entirely free of lead 210, a radioactive isotope that is an inevitable contaminant in newly refined lead.

The last thing you want if you're a particle physicist questing after subtle events is background radioactivity. So, to shield the instruments at Gran Sasso from emanations from the surrounding rock, the scientists were resigned to buying costly, specially prepared low-radioactivity lead or copper. But 2 years ago, Ettore Fiorini, a physicist at the University of Milan who is working at Gran Sasso, learned about the shipwreck. He and his colleagues at the Italian Institute of Nuclear Physics approached the archeological authorities in Sardinia with a proposition: The physicists would pay for salvage if the archeologists would let them keep part of the cargo. Deal done. By next month, the physicists expect to collect about 150 ingots as their booty. They will then melt down part of each ingot—the agreement stipulates that they spare the upper portions, which bear historically

important inscriptions.

At \$250,000 for the salvage operation, the physicists may not have gotten a bargain after all, says Fiorini. But money's not everything. "Since we could help the archeologists salvage the ship, I felt—not as a physicist, but as an Italian—that we had to do it."

### Sugar Sours Future for Gum Arabic

If you often worry about a North African coup threatening your supermarket's supply of designer ice cream, you may one day find yourself thanking Agriculture Department chemist Gregory L. Cote. Gum arabic is the secret emulsifier in a wide range of products, from skin cream to ice cream. It's so good at the job that U.S. firms annually import about 25 million pounds of the sticky liquid that is derived from acacia trees, mainly from the Sudan.

But gum arabic's days as a ubiquitous emulsifier may be numbered. Cote, who works at the National Center for Agricultural Utilization Research in Peoria, Illinois, has isolated an enzyme that converts sugar into alternan, a polymer that may provide a more stable and consistent source of supply than gum arabic.

But several hurdles remain before a new emulsifier hits the market. In a recent edition of *Agricultural Research*, Cote

says he needs to enhance alternan's emulsifying ability, perhaps by combining it with other emulsifiers. He also plans to clone the gene for alternansucrase, the enzyme that converts sugar to alternan, to boost production. The cane and beet sugar industries are nibbling at the polymer, Cote says, but "we need to be able to produce alternan a lot more cheaply" before they bite.

### Pauling Institute Foundering

Nobel Prize-winning chemist Linus Pauling has struggled for 25 years to get some respect from the medical establishment for his research on vitamin C. Now, his lack of success in that arena is catching up with him. The Linus Pauling Institute in Palo Alto, California, which he founded in 1973, is in such grim financial straits that some of its 35 employees have given up their salaries, and several have withdrawn their own retirement benefits to donate to the institute. Several hundred thousand dollars in the red, it will fold if fund-raising doesn't pick up within the year.

The crisis was precipitated by the end of a 10-year, \$5-million grant from the institute's biggest funder, the Japan Shipbuilding Industry Foundation (which supports health-related research), and a decline in private donations that make up most of the rest of the institute's \$3.4-million budget. Institute vice president G. Richard Hicks blames the drop on the recession and on reluctance by conservative donors to support the institute's work on AIDS.

The institute has had to rely on private sources because of its inability to obtain federal funding, something Pauling bitterly attributes to the medical establishment's conviction that anything involving megavitamin therapy is "quackery." Pauling told *Science* he is discouraged that the financial crunch should come just as vitamin C may be achieving a glimmer of legiti-

macy. As evidence, he points to a National Cancer Institute conference held last year on vitamin C and cancer, which pointed up some positive findings from research.

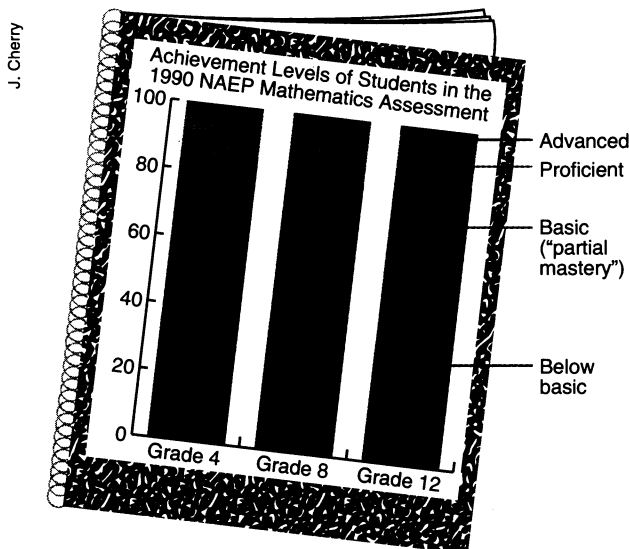
## Draper Awards for WWII Foes

An Englishman and a German who independently developed the jet engine during World War II have been awarded the 1991 Charles Stark Draper Prize, the world's largest engineering award.

Sir Frank Whittle, 84, and Hans J.P. von Ohain, 79, are sharing the \$375,000 award from the National Academy of Engineering. Whittle, who spent 25 years in the Royal Air Force, has been on the faculty of the U.S. Naval Academy in Annapolis, Maryland, since 1977. Von Ohain, whose early work was supported by aircraft manufacturer Ernst Heinkel, has lived in Ohio since 1947, when he came to work at Wright-Patterson Air Force base.

Asked at a press conference how the country could stimulate the development of more brains like theirs, both jet-age pioneers—who are now chums—stressed the need for simplicity. Said Whittle: “Things are getting so damn complicated that individuals don’t have the chance to do big things.” Von Ohain added that while improvements in existing inventions require complex technol-

## Achievement levels of students in the 1990 NAEP Math Assessment



**More sorry math news.** Fewer than 20% of elementary and high school students in the United States are “proficient” in math, and considerably more than one-third fail to meet minimum standards of performance, according to a newly established analysis of the results of the 1990 National Assessment of Educational Progress (NAEP). The analysis was conducted by the National Assessment Governing Board, authorized last year by Congress, which has set performance standards for grades 4, 8, and 12, based primarily on recommendations of classroom teachers. The board found large differences among ethnic groups: Among 8th-graders, for example, 4.2% of blacks, 22.3% of whites, and 38.9% of Asians were proficient in math. Boys come out ahead, especially in the “advanced” category where they outnumber females by more than 2 to 1.

ogy and teamwork, “break-through ideas are not from teams...Radical innovations are usually created in a simple way.”

The Draper prize is a biennial award established in 1989. The first winners were Jack Kilby and Robert Noyce, inventors of the integrated circuit.



**Birth of jet age.** Frank Whittle shakes hands with test pilot after Britain's first jet flight on 15 May, 1941.

## Name Games at DOE

Wordsmiths at the Department of Energy (DOE) have been sprucing up some of the department's stodgier programs with a fresh paint job and some unwieldy acronyms. On 23 August, for instance, the agency held an “inauguration” ceremony to rechristen its old, polluted Feed Materials Production Center in Fernald, Ohio—a former production facility for fissionables used in nuclear warhead production—as a showcase effort called the Fernald Environmental Management Project (FEMP). Cleanup of toxics at FEMP is expected to cost at least \$5 billion and take up to 20 years.

DOE also recently announced it would give the Solar Energy Research Institute (SERI) a resonant new name: the National

Renewable Energy Laboratory (NREL). The change won't do much beyond giving the lab a line item in the DOE budget, but a spokesman explained that the ponderous new designation (which staffers pronounce “un-real”) will put it on an “equal footing” with other national labs—even though the Bush Administration has been treating SERI “like a national lab already.” How so? The spokesman wouldn't elaborate, but he may have been referring to DOE's boast in a recent press release that its funding for renewable energy technology research has increased from \$138 million to \$246 million over the past 2 years. What the release doesn't mention is that in fiscal year 1981, the last budget controlled by the Carter Administration, DOE devoted nearly \$800 million (in 1981 dollars) to such research.

## Fusion Panel Lowers Its Sights

Facing actual growth of no more than 5% in the fusion budget, the Energy Department's Fusion Energy Advisory Committee last month reluctantly concluded that it's time to bail out of the Burning Plasma Experiment (BPX). A \$1.9-billion fusion reactor, the BPX would have doubled the department's fusion budget over the next 5 years.

The reactor was to have been the first to allow study of self-heating, or “burning,” plasmas. Self-heating occurs when a fusion reaction begins to produce about five times as much energy as it takes in, thus producing enough alpha particles in the plasma to sustain the reaction. That goal will now probably have to await construction of the International Thermonuclear Experimental Reactor, which is just beginning a 6-year design phase. In the interim, the fusion panel wants to build a smaller facility for the study of long-lived, “steady-state” plasmas, which could be done for perhaps a third of the cost of BPX.