

pants expressed "a depth of despair and discouragement that I have not experienced in my 40 years of science."

"Our senior faculty are demoralized, and our junior faculty are jumping ship," wrote biologist Alan F. Horwitz of the University of Illinois in Urbana. "Undergraduate and graduate students sense the despair and are turning away from science at a time when we need them most."

Physicist James C. Thompson of the University of Texas in Austin echoed the gloom: "My current plans are to quit. . . . As funds for research disappear, I lose the ability to support students and operate a laboratory."

This sense of crisis may seem ironic, Lederman notes, when one considers that basic-research funding has increased faster since the mid-1980s than any other nondefense spending. But he argues that several factors have conspired to put the fiscal squeeze on faculty scientists.

While the number of U.S. university researchers has doubled since 1968, federal funds for basic and applied campus research, when adjusted for inflation, reflect an increase of only 20 percent during that period, he says. (Using another inflation index, Presidential Science Adviser D. Allan Bromley calculates a 60 percent increase.) The rising cost of equipment and the increasing complexity of research pursuits contribute to the

money crunch, Lederman says.

He suggests two ways to create new revenue for federal research spending: issuing government bonds designated for research, and taxing high-tech consumer products. But when a reporter at this week's briefing asked Sen. Albert Gore Jr. (D-Tenn.) about the likelihood of Congress approving such a tax, scientists, policymakers and journalists erupted in cynical laughter. A deadpan Gore said he would "reflect on the matter." Citing the tendency of foreign companies to beat the United States to the punch in capitalizing on U.S. basic research, Gore warned that many Americans remain skeptical that a science funding increase would bolster the nation's economy.

David Goldston, a staff member of the House Subcommittee on Science, Research and Technology, criticized Lederman's report for its singleminded focus on funding. "The science community has to examine how things are done [within its own community]," he asserts, "and not just say that the system should go on the way it has been going on, 'only we need more money.' That is not going to get a sympathetic hearing."

Goldston suggests instead that researchers seek more grants for young scientists, provide the government with more guidance on which projects to fund, and accept that the 1960s "golden age of funding" won't return. — R. Cowen

Vitamin-rich blood may prevent angina

High blood levels of certain nutrients, especially vitamin E, may lower the risk of angina, a type of chest pain that often precedes a heart attack. This new finding, though based on an all-male study sample, adds to growing evidence suggesting that certain "antioxidant" nutrients may prevent blood vessel damage that can cause heart disease.

Harvard University researchers discovered last year that men who took beta carotene — a vitamin A precursor — suffered half as many heart attacks and strokes as men who took placebo pills during a six-year study (SN: 11/17/90, p.308). Many researchers believe beta carotene and vitamins E and C act as potent antioxidants in the bloodstream, thus blocking the formation of oxidized low-density lipoprotein (LDL) cholesterol. Scientific evidence suggests that oxidized LDL represents the worst form of cholesterol, damaging artery walls and triggering the buildup of fatty deposits that can reduce blood flow to the heart and eventually cause a heart attack.

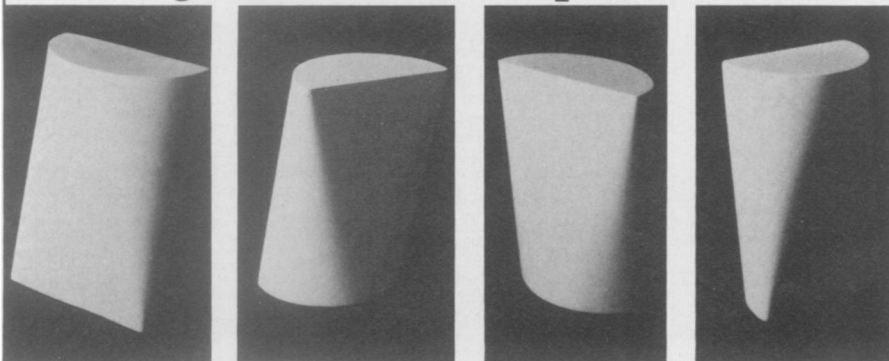
A report in the Jan. 5 LANCET adds another piece to the vitamin and heart disease puzzle.

Rudolph A. Riemersma and his colleagues at the University of Edinburgh in Scotland, working with K. Fred Gey at the University of Berne in Switzerland, studied 110 men with previously undiagnosed chest pain and 394 healthy men who reported no heart disease symptoms. The researchers took blood samples from all participants and analyzed the clear, plasma portion for carotene (primarily beta carotene) and vitamins E and C. Their statistical analysis revealed that men with higher-than-average plasma levels of these nutrients — particularly vitamin E — were less likely to experience chest pain than were men with lower-than-average plasma concentrations of the nutrients.

Riemersma recommends that people eat more fruits and vegetables, as well as vitamin-E-rich cereals, nuts and vegetable oils. Noting that middle-aged men in Scotland typically eat very few fruits and vegetables, he suggests that vitamin-poor diets may help explain why Scotland has one of the world's highest rates of heart disease.

It remains unclear whether a vitamin-rich diet can actually lower the incidence of heart disease in Scotland or elsewhere, cautions Lawrence J. Machlin, a vitamin researcher at Hoffmann-La Roche, Inc., in Nutley, N.J. Nevertheless, he says, this study and others like it offer compelling evidence for the theory that antioxidant nutrients, and especially vitamin E, may offer some protection against heart disease. — K.A. Fackelmann

'Leaning' column creates optical illusion



These four pictures, taken from different angles, show the same object. Which way does it lean?

Actually, it doesn't lean at all; it stands perfectly vertical. The three-dimensional optical illusion results not from some photographic trick but from the unusual properties of the shape itself. As a viewer walks around it, the recently designed form, called a Bareiss column, appears to tilt or wobble in various directions.

The structure has a semicircular base oriented in one direction and a semicircular top rotated 180° relative to the base. The column appears vertical only when viewed along the diameters of these semicircles or from an angle perpendicular to either of the diameters.

Several variations of the Bareiss column will go on exhibit for the first time next September at the Massachusetts Institute of Technology Museum in Cambridge. "It links art and technology beautifully," says Warren Seamans, director of the museum.

Artist/inventor Raymond Bareiss of Watsonville, Calif., conceived the shape in 1987 while trying to design an unusual, twisted canopy for hotel entrances. Since then, he has constructed numerous variations and contacted U.S. museum directors in search of similar forms. "I've been everywhere with it, and I can't find another object that is as visually deceptive," Bareiss told SCIENCE NEWS. "It's a very simple shape. I don't know why anyone hasn't come up with it before."