

RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Buying Into Nippon Superconductivity

Much has been made over Japanese investment in U.S. research—and the threat that this access poses to U.S. dominance in biotechnology and electronics. Now, it seems, some American firms may raise the same fears in Japan by investing in a big way in Japanese research. This month, DuPont announced that it has become the first U.S. company to become a full member of a Tokyo-based consortium to invest in high-temperature superconductivity research and development.

The consortium of 46 major Japanese companies—called the International Superconductivity Technology Research Center—was formed in Tokyo in 1988 under the government's Ministry of International Trade and Industry and is now the world's largest research collaboration in high-temperature superconductivity. Several foreign companies—including IBM, Hewlett Packard, Rockwell International, Hoechst, and Rhone-Poulenc—have been supporting members, but all that requires is an annual ante of \$25,000. DuPont's "full membership" costs it \$1 million a year.

Amateur Night on Space Telescope

For many amateur astronomers, a night of observing means setting up an 8-inch reflector in the park. Not for James Secosky, a high school teacher from Shortsville, New York, who has long harbored an interest in the solar system. This winter he'll be wielding an instrument that even professional astronomers might envy: He is using NASA's Hubble Space Telescope to get a close-up view of asteroids to see if they are "outgassing"—a sign that they were once icy comets that are now going dry.

Secosky and five other amateurs are the beneficiaries of NASA's success with its first amateur observing program, started in 1989. Officials at the

Space Telescope Science Institute say the work of the first group proved scientifically valuable; Secosky even published a paper based on his observations of Io. "We're happy enough that we're ready to do it again," says Hubble spokesman Ray Villard.

This new group will get about 1% of the Hubble's available time over the next several years, says Villard. They'll also get some help from Space Telescope professionals in scheduling and planning their projects. In his asteroid observing project, for example, Secosky will collaborate with engineer Harald Schenk.

Others in this round include Benjamin Weiss, a 19-year-old college student who will try to get a close-up look at some odd, peanut-

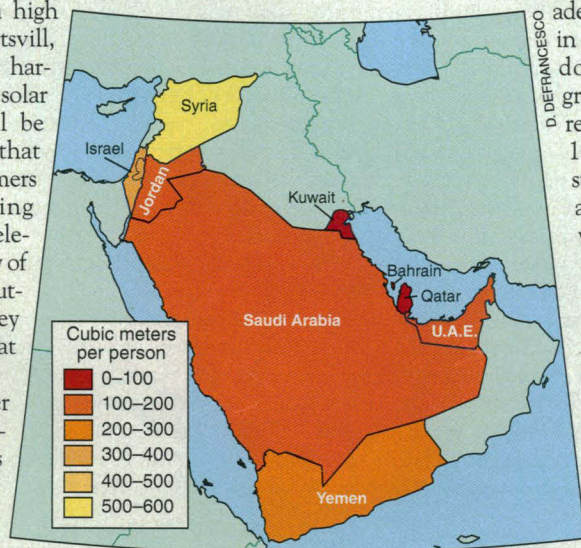
shaped asteroids to see whether they are actually pairs of smaller asteroids orbiting each other; programmer/analyst George Lewycky, who will study the atmosphere on Titan, one of Saturn's moons; high school teachers Lewis Thomas and Karl Hricko, who will get a look at a quasar that is believed to lie at the very edge of the observable universe but that, oddly, appears to be attached to a much closer galaxy; and Nancy Cox, a nurse, who will study the prolific star-forming region of the Lagoon Nebula.

Cox, for one, is hoping that NASA makes amateur night a regular event on the Hubble. She already has another idea: a study of the very hottest stars in the galaxy.

Technology Not Enough for a Thirsty Planet

Those who protest wars fought for oil may be changing their cry in the coming years to "No war for water!" Worsening drought this decade—especially in the Middle East and Africa—may spur international conflict and major shifts in national economies, according to a new book by the Worldwatch Institute, a Washington-based environmental research organization. Warns Sandra Postel, author of *Last Oasis: Facing Water Scarcity*, "By the end of the '90s, water problems in the Middle East will lead either to an unprecedented degree of cooperation or a combustible level of conflict."

A total of 26 nations currently have water supplies inadequate to support their populations, and nine of them are in the Middle East, said Postel. In Africa, with 11 water-scarce countries, 300 million people—one-third of the continent's population—will be living in drought-stricken areas by the end of the decade. Worldwatch observes that conservation and technological innovations such as micro-irrigation, which have made the desert bloom in Israel, cannot bring about adequate water supplies in the absence of a slowdown in population growth, which, at current rates, will double in 18 of the 20 drought-stricken Middle Eastern and African countries within the next generation. "No set of technology feats, however imaginative, can win that race," said Postel.



No desert storms. Sparse renewable water supplies—less than 600 cubic meters yearly per capita—promise trouble.

Leukemia: Child of Unholy Gene Couplings

It's been more than a decade since scientists figured out that many leukemias arise when a cancer-causing gene is activated by an abnormal DNA-swap between two different chromosomes—but just which genes were involved? Now two teams of biologists, at Jefferson Medical College in Philadelphia and at Stanford University, have linked several forms of leukemia to a swap—called a translocation—involving a newly discovered oncogene on chromosome 11.

The Jefferson team, headed by geneticist Carlo M. Croce and molecular biologist Eli Canaani, scoured the DNA of patients with acute lymphocytic leukemia (ALL), a common childhood leukemia, for evidence of a translocation. Although the process leading to a translocation is little-understood even today, the researchers found what they were looking for when they discovered that a gene (dubbed "ALL-1") located on chromosome 11 can fuse to another gene (called "AF-4") located on chromosome 4. Looking at patients with other forms of leukemia, the researchers also found translocations between ALL-1 and genes on eight other chromosomes. Furthermore, they found that ALL-1 is related to the trithorax gene in fruit flies, which helps regulate development. The normal ALL-1 gene might play a similar role in humans, Croce says, with a translocation causing it to malfunction.

The Jefferson team, which reported its findings in the 13 November *Cell*, isn't the only one hot on the gene fusion trail. Stanford geneticists Michael Cleary, Douglas Tkachuk, and Sabine Kohler report in the same issue that a gene they call "HRX"—apparently the same as ALL-1—fuses to a gene on chromosome 19 in some cases of acute lymphoblastic leukemia.

Croce and Canaani hope the next step will be the development of a PCR test for ALL-1 that could show whether any leukemic cells survive in patients who have undergone chemotherapy.