Briefings

edited by CONSTANCE HOLDEN

Malaria Research Under Scrutiny

The U.S. effort to combat malaria has been in upheaval for several years, ever since a vaccine research program at the U.S. Agency for International Development (AID) ran into severe management trouble (*Science*, 29 July 1988, p. 521). Now, in hopes of regaining balance and direction, the three major federal sponsors of malaria research are giving the Institute of Medicine (IOM) $600,000 to do a comprehensive review of the field.

"We're going to look at everything, the whole kit and kaboodle" of U.S. malaria prevention and control programs, says Stephanie Sagebiel of the IOM. Sponsors of the study, in addition to AID, are the National Institute of Allergy and Infectious Diseases and the Department of Defense. A committee of 17 to 20 experts, with a staff of three, will review various strategies for controlling malaria, assemble information on cutting-edge research, and recommend future government strategies. A draft is due in 18 months. The chairman has not been selected yet. Jay Sanford, president of the U.S. Uniformed Services University in Bethesda, Maryland, is one of the candidates under consideration.

Probing the Big Bang

A dramatic flow of new information on cosmic background radiation—essentially the afterglow of the Big Bang—is expected from the Cosmic Background Explorer satellite (COBE), to be launched from California's Vandenberg Air Force Base on 9 November.

Cosmic background radiation is a faint whisper of microwave and infrared photons that impinge on Earth from every direction. It yields the only direct evidence of what the infant universe was like.

The $230-million COBE, under development at NASA for 7 years, is designed to improve the quality of ground-based data by factors of 100 to 1000, depending on the wavelength monitored. Indeed, it will allow scientists to study far infrared wavelengths for the first time, opening a brand new window on space.

COBE will map the sky twice during its 1-year mission, looking at whether the temperature and brightness of the radiation are uniform in all directions from Earth. Variations in temperature could mean that energy sources other than the Big Bang, such as black holes, were in on the formation of the universe. Variations in brightness would indicate nonuniformity in the density of matter in the aftermath of the Big Bang. Higher density areas are presumably the precursors of modern galaxies. COBE also might be able to detect a faint glow from the very first stars and galaxies.

Originally scheduled for launch on the space shuttle, the probe was delayed a year by the Challenger disaster. A slimmed-down version was redesigned for launch by a Delta rocket.

Women (Not) in Math

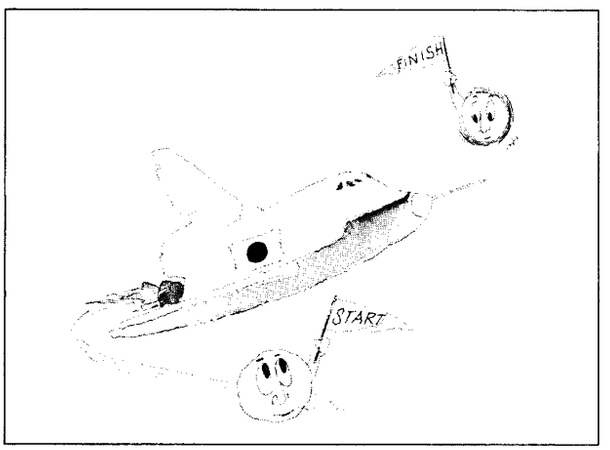
Efforts to get more women into math have a long way to go, judging by the results of the latest William Lowell Putnam college math contest. Of the 100 winners, only one is a woman.

The Putnam contest, now in its 50th year, is the premiere math contest for undergraduates in the United States and Canada. Administered every December, it is a grueling 6-hour affair involving 12 essay-type questions that put a premium on ingenuity, speed, and creative problem-solving. Students enter individually or in teams of three whose scores are combined.

About 2100 students from 360 institutions took the test last year. All the top winners were men, with Harvard in the lead. The lone female winner was 22-year-old Paulina Chin, now a graduate student in computer science at Waterloo University in Ontario.

Officials of the contest, run by the Mathematical Association of America, have expressed distress over the low female showing. Loren Larson of St. Olaf College in Northfield, Minnesota, who helps design the questions, says they don't know what proportion of entrants are females because gender is not designated on the test. But the NSF has reported that 40% of mathematics undergraduates are women. A far smaller proportion go on to do graduate work in the field.

Larson says that although doing well on the test is a good indicator of mathematical talent, it doesn't tell the whole story because it doesn't reflect such qualities as persistence and depth of thinking. Larson himself says, "I don't think I would do well on a Putnam exam."



The New Moon Race?

Watch out America, here comes Japan again, this time trying to take over the moon business. At least three Japanese space research groups—two government space R&D agencies and a private industry consortium called the Institute for Future Technology—have been looking into robotic and manned missions to the moon. And they aren't just fooling around. One anonymous American official who has seen the studies says there is a "large-scale effort" going on, with a "surprising amount of depth in the analysis," including complex scenarios for robotic construction of a manned base on the moon.

The lunar plans can't be found in the official Japanese space agenda yet, but if you want a hint of Japan's growing interest in the moon, check out the last journal of the Japan Society of Macro Engineers. Sources say it is devoted entirely to lunar bases, a topic that has gotten nary a glance in previous issues.

The only thing Japan lacks for its plans is launch capability, so any trip to the moon would most likely be an international effort. But it looks as if Japan might be ready and waiting to take the leadership role in the second generation of manned moon exploration.

Software Solution

With Japanese companies threatening to surge into the lead in the supercomputer race, U.S. manufacturers are whipping themselves into a frenzy with new hardware: bigger memories, faster processors, and more and more processors working in parallel. If they want to stay ahead, they have no choice—right?

Not necessarily, says David J. Kuck, director of the University of Illinois Center for Supercomputing Research and Development. The brutal fact is that very little attention is being given to the applications and systems software required to exploit all that hardware, he said at a 17 October press briefing hosted in New York by the Institute of Electrical and Electronics Engineers.

Indeed, according to a new set of benchmark programs that he and his students have developed, a supercomputer's speed on real-world problems is typically no more than 1 or 2% of its advertised peak speed.

Kuck's solution: better software. Kuck and his colleagues have shown that fairly simple improvements can substantially increase speed; with serious efforts, increases could easily go much higher. "Imagine getting 10% via software," he says.

Welch Award to Davidson

Biologist Norman Davidson of the California Institute of Technology in Pasadena says he loves his work so much he'd be willing to pay Caltech to cover its costs—if he were a wealthy man.

Now he has a chance to make good on the sentiment. He has been awarded this year's Welch Award, which comes with $225,000, for contributions spanning his 40-year career. The Welch Foundation has cited the 73-year-old Davidson's work in the '50s, which laid the foundation for a commonly used method of determining how closely related different nucleic acids might be. Davidson is currently focusing on how mammalian cells work.

Nicholson Replaced by Sanchez at NSF

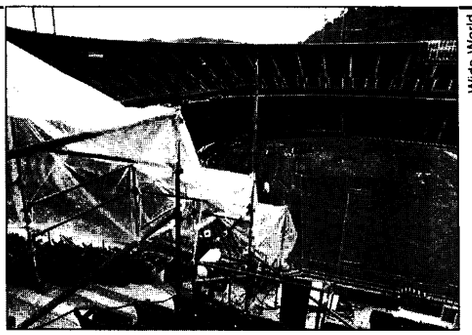
The National Science Foundation's directorate for mathematical and physical sciences has a new chief. He is David A. Sanchez, named this week to replace Richard S. Nicholson who left NSF to become executive officer at the AAAS.

Sanchez, a mathematician specializing in differential equations, is presently vice president and provost at Lehigh University in Bethlehem, Pennsylvania. He was formerly chairman of the mathematics department at the University of New Mexico and a professor of mathematics at the University of California, Los Angeles.

Sanchez's appointment is effective 1 June 1990.

Quake Delays Nobelist's Pitch

Stephen Jay Gould move over: science has a new all-star baseball maven. This year's winner of half the Nobel Prize for Physiology or Medicine, J. Michael Bishop, is a San Francisco Giants season ticket holder. So when the baseball commissioner's office called to ask if he and co-winner Harold Varmus—both Bay Area residents—wanted to throw out the first pitch in game 4 of the World Series, wild horses couldn't keep him away.



Wide World

Repairs at Candlestick.

But an earthquake did. Bishop was at packed Candlestick Park 25 minutes before the start of game 3 of the series when the Loma Prieta earthquake shook the stadium. The game was canceled and the series suspended for 10 days, postponing Bishop's pitching debut indefinitely.

Bishop and Varmus were originally on tap for game 4 when the series resumed. But they were bumped by Willie Mays—who had been replaced in game 3 by 12 heroes of earthquake rescues. They might have gotten their chance in game 5, but the Giants lost four straight to the Oakland A's.

Two Who Never Joined the Revolution

The plate tectonics revolution has marked its 20th anniversary, but for some the battle over the mobility of Earth's crust goes on. One of the old war-horses in the rear guard action against plate tectonics is Vladimir V. Beloussov, the head of the Department of Geology of the Academy of Sciences of the USSR since 1944. At this summer's International Geological Congress, the curious packed a meeting room to catch a glimpse of Beloussov. Did he still believe all that stuff about immobile continents?

It seems he does. Most geologists say the continents are embedded in planet-girdling plates that have been jostling each other for billions of years. But Beloussov sees a globe that until a scant 250 million years ago was completely sheathed in continental crust, after which the interior began oozing magma that has formed ocean crust in its place. Such "oceanization" has been sapping the continents toward extinction ever since, said the Russian.

"No one wants to dispute this?" asked the moderator. All declined. Beloussov might have had an ardent defender but for the march of time. Sir Harold Jeffreys, the eminent physicist, died last spring. In the 1920s Jeffreys rejected continental drift, for good reason, but he remained firmly opposed to all variations of it, including plate tectonics. Perhaps the old geologist's saying still applies: "I wouldn't have seen it if I hadn't believed it."

NEH Proposes Core College Curriculum

In an education system where some college students can fulfill social science requirements by taking a course on "Lifetime Fitness," no wonder 40% of seniors (according to a recent Gallup poll) don't know when the Civil War occurred.

The National Endowment for the Humanities (NEH) has recently added its voice to the growing chorus of concern over the scattershot education many college students are getting. It has prepared a report, *50 Hours*, in which it proposes a 4-year core college curriculum.

The report outlines general guidelines in five broad areas: it recommends six semesters on "cultures and civilizations" (including the origins of civilization, and Western, American, and "other" civilizations), 2 years of a foreign language, 1 year of mathematics, 1 year on the natural sciences, and 1 year on "the social sciences and the modern world." The plan says students should be required to write papers in every course.

Core courses should be related to other core courses, says the NEH. And they should be taught by "an institution's most distinguished faculty"—otherwise, "the stature of general education is diminished."

Such a policy would mean radical changes. According to the NEH, one can graduate from 38% of the nation's colleges and universities without taking any history course at all, much less Western civilization, which is optional at 78% of institutions. One-third require no courses in science.

The poll of 700 seniors revealed that many have dim knowledge of even the recent past—for example, only 62% could identify Gloria Steinem and Betty Friedan as feminist leaders of the 1970s.