Briefings

edited by CONSTANCE HOLDEN

Drugs and Biotechnology

Eight years after Eli Lilly won approval to market human insulin as the first product of the new biotechnology industry, the pharmaceuticals pipeline is bulging with genetically engineered medicines. Today, 104 are being tested in human clinical trials or are being reviewed by the FDA, according to the 1990 annual survey by the Pharmaceutical Manufacturers Association (PMA). That represents a 24% increase over last year. Well over half of the new drugs are for cancer or cancer-related conditions—the nation's second leading cause of death. Another 15 are being tested for treating AIDS or HIV-related conditions.

Of the 104 drugs, only 11 actually have been approved by the FDA for physicians to prescribe. But 18 others have completed clinical trials and 14 more are in the final stages of human trials.

The PMA claims that drugs and health care products accounted for almost half of all biotech patents in 1989. The others were primarily for agricultural and environmental cleanup products.

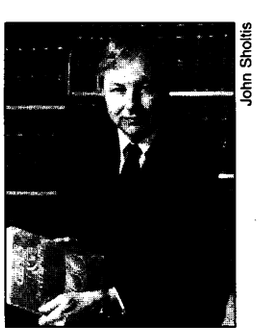
Climate Experts Say It Again: Greenhouse Is Real

The White House may be sending the message that there's no need to hurry on global warming, but, according to a new poll, the world's climate scientists think otherwise. The survey, conducted by the *Global Environmental Change Report* newsletter in Arlington, Massachusetts, got responses from 330 of 1500 "global environmental change" scientists polled in 41 countries. Almost 90% favored taking immediate steps to reduce carbon dioxide emissions even though the science of greenhouse warming is still not all that solid. Only 65% believed there is a better than 50:50 probability of a moderate greenhouse warming (at least 2°C) during the next 100 years. But to most of those polled, that threat seemed sufficient to justify action now to reduce greenhouse gases.

Developments since another survey was conducted in the mid-1970s suggest that climate scientists are not all wet when it comes to such predictions. In that poll, by the National Defense University in Washington, D.C., 24 selected climatologists from seven countries predicted a slight temperature rise by 2000 as carbon dioxide–induced warming would begin to overcome the cooling trend that had been under way since the mid-1940s. That survey came before the realization that anthropogenic gases other than carbon dioxide would double the expected warming. As soon as this poll came out in 1978, the cooling trend ended and the global temperature began its leap into the sizzling 1980s.

Baltimore Assembles Team

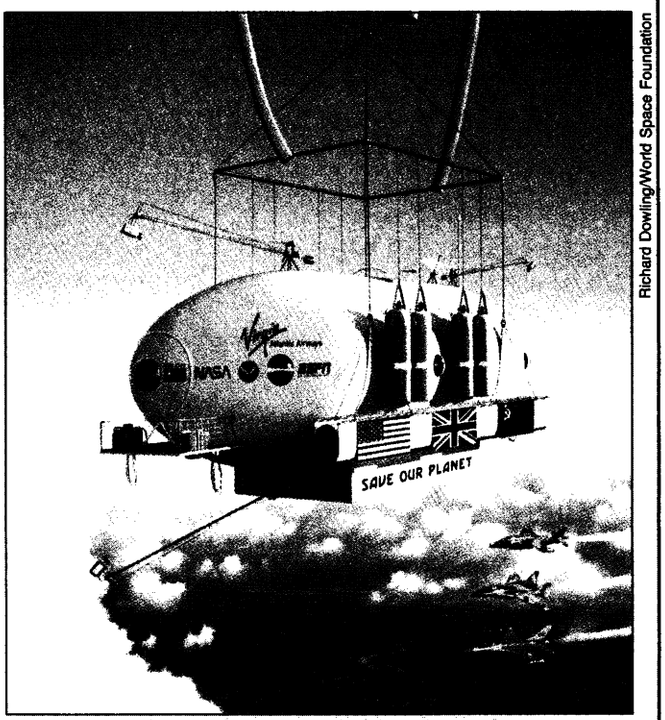
David Baltimore is acting expeditiously to get his team together as Rockefeller University's new president. On 15 May he announced that Rockefeller biologist James E. Darnell, Jr., has been appointed to the new post of vice president for academic affairs, effective 1 July. Baltimore has also tapped Frederick M. Bohen, currently vice president for finance and administration at Brown University in Providence, Rhode Island, to be Rockefeller's executive vice president. He will replace Rodney W. Nichols, who will move to New York's Carnegie Corporation in the fall.



John Sholtis

James Darnell

Darnell has been especially supportive of Rockefeller's effort to attract young researchers through its university fellows program. His appointment is taken as a sign that this will be a priority with the Baltimore administration. The appointment also presages a move toward organizing the university around scientific disciplines rather than around distinguished individuals.



Richard Dowling/World Space Foundation

EARTHWINDS Around the World. *A trio of American, British and Soviet adventurers are planning the first nonstop circumnavigation of the earth in a balloon. A high-tech contraption with a closed 24 by 10 foot gondola slung beneath a helium balloon, their vehicle is a far cry from novelist Jules Verne's wicker-basketed rig. A lot faster, too. It will spend only 12 to 21 days riding the jet stream across North America, the Atlantic, Europe, the Soviet Union, Japan, the Pacific, and back to the takeoff point in Akron, Ohio. NASA and NOAA will provide satellite communications, and the crew will use the Global Positioning Satellite system to track their location to within a few feet. Riding the EARTHWINDS balloon will be American pilot Larry Newman and British entrepreneur Richard Branson—both veterans of transoceanic balloon crossings—and Soviet cosmonaut Vladimir Dzhanibekov. The balloon, whose design is still proprietary, will be launched some time between November and February, depending on the weather, from the Loral Airdock in Akron. Sponsors of the project are Branson's Virgin Atlantic Airways and cable television network ESPN.*

Science for Nonscience Majors

"The call for education reform has finally reached higher education," says Audrey Champagne, study group director for the AAAS Project on Liberal Education and the Sciences. Last year the AAAS issued a report, "Science for All Americans," outlining goals for precollege science education. Now it has done the same for under-

graduate science.

The new report, "The Liberal Art of Science," says students should be given "a better grasp not just of scientific facts but of the history, ethics, and impact of science." It contains recommendations on raising the quality of undergraduate science courses as well as getting them better integrated into the liberal arts curriculum.

The report says all liberal arts majors should be required to take at least 15 semester hours on the natural sciences. Would-be science teachers should take more, and those electing to teach a particular discipline should receive their degrees in that discipline.

The report, which its authors hope will serve as a "helpful guide" for faculties as they deliberate over these matters, lists activities and courses in institutions around the country that it says embody desirable approaches.

DOE Fills Biology Post

David Galas, a physicist turned molecular biologist from the University of Southern California, has been appointed to fill the long-vacant post of associate director for health and environmental research at the Department of Energy. He replaces Charles DeLisi who left in 1987.

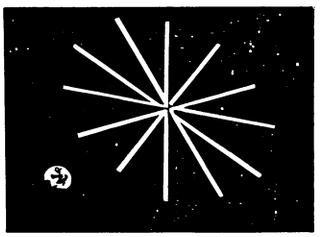
As head of DOE's biology branch, Galas has charge of a $300-million research budget, divided among the human genome project, radiation biology, atmospheric and climate research, and ecology and marine biology. Galas is expected to be a strong advocate for DOE's genome project, budgeted at $46 million for fiscal 1991. He also hopes to inject more modern molecular biology into the department's research program.

A Sailing Race to Mars?

Scientists for years have been talking about using sails—huge, thin sheets of metallized plastic—in lieu of chemical propulsion for unmanned spacecraft. Now, if plans for the Columbus 500 Space Sail Cup come off, the dream may be nearing reality.

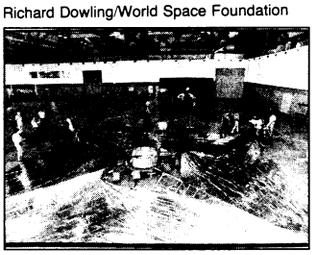
The race, featuring three vessels from Europe, the Americas, and Asia, plus any other entries meeting specifications, is being sponsored by the Christopher Columbus 500 Quincentenary Jubilee Commission. The plan is to launch the folded sails into high earth orbit by rocket on Columbus Day 1992. Sunlight will propel them past the moon and on toward Mars within 1 to 5 years.

So far everything's in the design stage. Part of one prototype—a 50-foot section of a sail 55 meters square—has been built by the privately-funded World Space Foundation in South Pasadena, California. Other designs include a disk-shaped, 560-foot-wide sail rimmed by 4-foot "petals," being promoted by a consortium led by the Johns Hopkins University Applied Physics Laboratory.



MIT's Heliogryo

Richard Dowling/World Space Foundation



Half-scale prototype *developed by World Space Foundation in 1981.*

Andreas von Flotow of the Massachusetts Institute of Technology claims MIT has come up with the most practical design, an extremely lightweight (44 pounds) "heliogyro," with eight 90-foot arms that are 5 feet wide and thinner than Saran Wrap, that will spin slowly to control the craft's attitude. Designs have also been submitted from Canada, Italy, Great Britain, China, and the Soviet Union.

Enthusiasts say solar sails will travel as fast between planets as existing spacecraft and can carry heavy cargos on long-range missions. Although the sails will be expensive (ranging from $3 million to more than $15 million), less "launch mass" will be needed in absence of fuel that can occupy up to 99% of a spacecraft, says von Flotow.

Whether the race will get off the ground depends mainly on whether its chairman, Washington, D.C., businessman Klaus P. Heiss, can round up at least $10 million from aerospace industries to cover procurement and launch costs. NASA dropped the idea of a heliogyro after spending $10 million to design one that could rendezvous with Halley's comet in 1977.

Finland to Join CERN

Finland is set to become the 15th member of CERN, the European Laboratory for Nuclear Research based near Geneva in Switzerland. The country's formal application has been accepted by the CERN council, and all that remains is for the Finnish government to ratify the convention that governs CERN. "We expect that by late September," says Matti Lähdeoja, deputy director-general of the Ministry of Higher Education and Research.

For its $11-million annual dues, to be phased in over 5 years, Finland will get full participation in CERN's research programs, excellent training opportunities for young Finnish scientists and engineers, and a shot at contracts to build parts of CERN's next big project, the Large Hadron Collider. Finland's industry has considerable expertise in low-temperature physics and superconductors, but as Lähdeoja points out, only member states can be awarded contracts by CERN.

"Finally, there is the European dimension," says Lähdeoja. "We want to be part of something that already includes almost all countries in western Europe." Once Finland is admitted, only Iceland and Ireland will be outside the charmed CERN circle.

A CERN source says that "in a couple of years we may have a lot more new members." A Polish delegation arrives at CERN next week for "very serious" discussions about membership. And Czechoslovakia, Hungary, and Yugoslavia are not far behind.

Citation Impact on the Coast. *The ten universities in the Pacific Athletic Conference also compete with each other in research. According to an analysis of citations per paper performed by the Institute for Scientific Information's Science Watch, Stanford University, traditionally the front-runner, has shown some slippage in the '80s. The University of Oregon has climbed and now clearly outperforms Berkeley, a much bigger paper producer, in citation impact. Arizona State University, which ranked at the bottom in 1973 to 1988, showed the biggest jump—it now beats out Oregon State and Washington State.*