RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Early Puberty Getting More Common

Girls are reaching puberty a lot earlier than the textbooks say, according to a survey of pediatricians' patients around the United States. The results have added fuel to the debate over whether estrogenlike chemicals in the environment are having an effect on humans.

The survey, published in the April *Pediatrics*, was launched by Marcia E. Herman-Giddens, a public health professional and physician's assistant at the University of North Carolina, Chapel Hill. It comprised 17,077 girls aged 3 to 12; 9.6% of them were African American, the rest white. Although textbooks say it is abnormal for girls to show signs of sexual maturation under the age of 8, the researchers found that 1% of whites and 3% of blacks already showed signs of pubic hair or breast development by age 3. By age 8, those figures had jumped to 14.7% and 48.3%, respectively. The racial differences are in line with other evidence that blacks develop more quickly than whites do.

The survey also found that the age of onset of menstruation for whites—12.9 years—has not changed appreciably over the past 40 years. It's been dropping for African Americans (it was 12.2 years in this study), a decline widely attributed to improving nutrition.

But to some people, the across-the-board earlier development suggests that hormonelike chemicals—so-called endocrine disrupters, such as certain pesticides—are at work. Biologist Pete Myers of the W. Alton Jones Foundation in Charlottesville, Virginia, and co-author of a book on the subject, *Our Stolen Future*, argues that the study is a "wake-up call for people who think xenobiotic environmental estrogens are not having an important human health impact."

Biologist Earl Gray, of the Environmental Protection Agency in Research Triangle Park, North Carolina, is more dubious. He points out that environmental estrogens would be likely to spur only breast growth because androgens cause the growth of pubic hair. Other experts—such as anthropologist Stanley Garn, of the Center for Human Growth and Development at the University of Michigan, Ann Arbor—say the explanation for ever-earlier puberty lies in the well-established link between body size and sexual maturation. Girls have been getting steadily plumper, he notes.

Will the age of puberty continue to fall? Says Herman-Giddens: "All I can say is, I hope not."

Mouse Man Wins Big

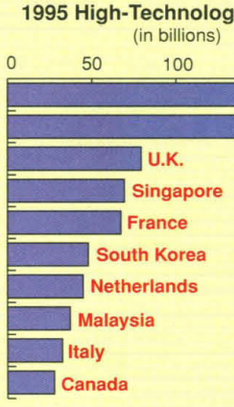
The inventor of the computer mouse, Douglas Engelbart, finally hit the jackpot this month. He's $500,000 richer as the winner of this year's Lemelson–Massachusetts Institute of Technology prize, billed as "the world's largest single cash prize for American innovation." Also honored at last week's ceremony at the Smithsonian Institution in Washington, D.C., was Nobelist Gertrude Elion, developer of dozens of therapeutic drugs, who received a Lifetime Achievement Award but no cash.

Engelbart, 72, is credited with a host of inventions that have shaped the development of hypertext, multimedia, and computer networking. He invented the now-ubiquitous mouse, patented in 1967 while he was working at Stanford Research Institute in Menlo Park, California. But it wasn't a great profit maker before the patent ran out, he says. "The mouse was just something done along the way to do what we wanted to do in the big picture." Now he's filling in that picture as director of the Bootstrap Institute in Atherton, California, which he founded in 1989. The goal: "boosting the IQ of every collective human endeavor with computers and networks, hypermedia, and collaborative technologies."

Elion, 79, shared the 1988 Nobel Prize in medicine for drug development over a 40-year career at Burroughs Wellcome (now Glaxo Wellcome) in Chapel Hill, North Carolina. Elion, who never got a Ph.D., holds 45 drug patents.

The Lemelson–MIT program, established in 1994 by inventor Jerome H. Lemelson, is administered by MIT economist Lester Thurow.

High-tech economy. This year, the World Bank's annual publication, *World Development Indicators*, has added a section on science and technology, with country-by-country information on such factors as R&D investment and the number of personal computers and Internet connections per capita. The publication shows, for example, that Singapore, Korea, and Malaysia are now up there with Western nations and Japan in high-tech exports. It also finds that the country with the most scientists and engineers per million people—6761—is Ukraine, where, as in other Eastern European countries, engineers are the main product of the higher education system. In most developed countries, the number ranges between 2000 and 3000. For more information on the report, go to the Internet at www.worldbank.org.



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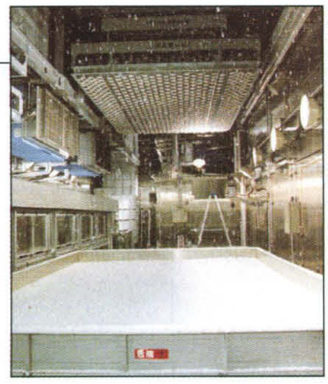

NATIONAL RESEARCH INST. FOR EARTH SCIENCE AND DISASTER PREVENTION

Let it snow. Inside Japan's one-of-a-kind weather simulator.

Baby, It's Cold Inside

Japanese researchers have invented a gizmo that would be the envy of any Hollywood moviemaker: a building that can simulate all kinds of weather. Called a Cryospheric Environment Simulator, it was built by the Shinjo Branch of Snow and Ice Studies, part of the National Research Institute for Earth Science and Disaster Prevention.

The three-story, $12 million facility, completed last month, comes with all of Mother Nature's weathermaking capabilities. Atsushi Sato, a snow disaster researcher at the Shinjo branch, says the facility will enable scientists to do controlled, repeatable experiments on hitherto uncontrollable phenomena. Snowmaking equipment can generate snow or ice particles or rain that can accumulate at rates of up to 5 millimeters an hour. Falling snow can be blown about at up to 20 meters per second, so scientists can watch how winds suspend and transport snow. Once the snow lands on a tiltable experiment table, measuring 3 by 5 meters, it can be subjected to simulated solar radiation. All of this can be made to occur at specific temperatures and humidity levels.

Sato says the simulator will help researchers understand the anatomy of avalanches, and will aid in the design of buildings and other structures by showing just how snow and ice accumulate on them. Larry Hinzman, a snow hydrologist at the University of Alaska, Fairbanks, says he

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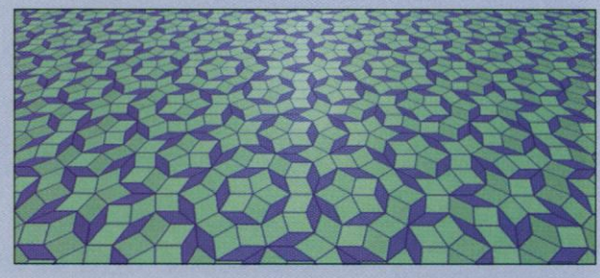
hopes to get the chance to use the simulator. The ability to control interacting variables separately will lead to better modeling of such things as snow melt and runoff, which could aid forecasting of spring floods and lead to a better understanding of Earth's hydrological cycle, says Hinzman. Studies of how the albedo, or ability to reflect light, changes as snow melts or otherwise degrades could improve modeling of the way Earth absorbs solar radiation. The simulator also could be used to calibrate remote sensors for use on satellites. Says Hinzman: "I think it will be incredibly useful."

Flap Over Toilet Tissue



UNIV. OF MINNESOTA GEOMETRY CENTER

Oxford University mathematician Sir Roger Penrose is claiming that a brand of quilted bathroom paper infringes on his copyrights. The distinguished professor noticed a year ago that the pattern embossed on the tissue is very similar to the "Penrose pattern," which he discovered more than 20 years ago.

Now Penrose has filed suit against Kimberly Clark Ltd., the British subsidiary of the American-based conglomerate, claiming breach of copyright. He is demanding that the company, makers of Kleenex tissues and Huggies diapers, discontinue the design and either destroy or forfeit to him and Pentaplex Ltd.—a company that owns the rights to much of Penrose's work—all items or documents with the pattern.

The geometric tiling, which Penrose first drew more than 20 years ago in a notebook, covers a surface with two diamond shapes in a pattern that is almost—but never quite—repeated. It was widely hailed as a breakthrough for its never-ending lack of repetition with the use of only two different shapes.

A spokesperson for Kimberly Clark said the company had some warning from Penrose. "Pentaplex did make its concerns known last year," she said. "We had some initial discussions but couldn't reach a resolution." The company hasn't yet decided how to respond to the suit.

Filling Chinese Botany Gap

Imagine trying to make sense of a map with a huge corner ripped off. Botanists have been doing just this since the Communists took over mainland China in 1949. The country and its plant life have been largely off limits, even though Chinese forests, jungles, and fields hold an estimated 30,000 plant species—a third of them found nowhere else in the world. "During the long period of isolation, foreigners lost interest in China," says David Boufford, assistant director for collections at the Harvard University Herbaria.

Now, they will have a chance to renew the acquaintance: Some 420,000 dried specimens from many of these coveted plants, pressed between pages of newspaper and stacked inside cardboard boxes, are making their way to the Missouri Botanical Garden in St. Louis. The plants, collected between 1930 and 1950, are being sold to the garden for about $450,000 by a handful of Chinese herbaria. Chinese and Western botanists are working together at the garden on classifying the new arrivals.

Medical researchers, horticulturalists, and ecologists will all benefit from access to the cache, says curator Henk Van Der Werff. Already, thousands of herbs that originated in Asia—including licorice, ginseng, hyssop, and jimsonweed—are noted for their healing properties. Other plants—such as the endangered conifer, *Cathaya argyrophylla*—offer an opportunity to examine species that are unique to China. Since 1950, China's population has grown by roughly 800 million people, says curator Ihsan Al-Shehbaz, so "many of these plant species have become rare—or have disappeared entirely."

MISSOURI BOTANICAL GARDEN

Plant bonanza. Workers classify Chinese specimens.

The acquisitions complement the garden's Flora of China project, which entails revision and translation of the massive Chinese-language catalog, *Flora Reipublicae Popularis Sinicae*, begun in 1959.

Symbiont Society

Almost 120 years after German mycologist Anton de Bary coined the term "symbiosis"—to describe mutually dependent, parasitic, and other intimate living arrangements between species—researchers in the growing and sometimes controversial field of symbiology have started their own professional society. The International Symbiosis Society, born last week at the 2nd International Congress on Symbiosis in Woods Hole, Massachusetts, will "call attention to the need for recognition of symbiosis as a scientific discipline," according to a draft constitution.

That recognition is overdue in the opinion of many scientists. "Symbiosis got short shrift historically," notes historian Jan Sapp of York University in Toronto, Ontario, in part because it became entangled in ideological conflicts such as those over Darwinism. As a result, he says, the term symbiosis took on negative connotations.

Now, says the society's president, John J. Lee, a biologist at City College of New York, "The time is right to recognize that symbiotic association is a central theme of life on Earth and that symbiosis is a major contributor to evolutionary change."

Included on the society's 11-member board is University of Massachusetts, Amherst, biologist Lynn Margulis, who helped win acceptance for the idea that modern plant and animal cells evolved from symbiotic partnerships forged by ancient bacteria several billion years ago. Over the last 30 years, Margulis and others also have shown how many creatures, including humans, depend on symbiotic microorganisms such as bacteria and fungi for survival.

These findings have made "studying symbiosis more honorable," says biologist James White of Rutgers University. Not long ago, notes Margulis, "using the word symbiosis in a grant application was tantamount to suicide."