RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Changing Sex Is Hard to Do

Boys will be boys. That's the message from a unique, long-term follow-up of a male who, after losing his penis, was subjected to intensive efforts on the part of psychiatrists, surgeons, and his parents to feminize him. Now in his 30s, he is living as a man and happily married, scientists report in the March *Archives of Pediatric Adolescent Medicine*.

Sexologist Milton Diamond, of the University of Hawaii, Honolulu, has followed the case since the 1970s. He says the story of "John" and "Joan" has long been presented in textbooks as the "classic" demonstration that environmental forces can override biology in shaping gender identity. John's penis was accidentally burned off in 1963 during his circumcision at the age of 8 months. He was brought to Johns Hopkins University in Baltimore, where, under the guidance of sex researcher John Money, a decision was made to turn him into a girl—removing testicles, structuring a vagina, and giving him female sex hormones later.

Despite years of being treated as a girl, "Joan" was never comfortable and finally rebelled at 14, after 2 years of estrogen therapy. "I['ve] suspected I was a boy since the second grade," he told his doctor. He eventually got a mastectomy and doses of male hormones. At 25, he married a woman who already had children.

"It's big news," says psychologist Michael Bailey of Northwestern University in Chicago. "This case was heralded by many as the pinnacle of proof that psychosocial factors can override biological factors." Some textbooks have continued to cite the case, he says, despite John's reversion to maleness and much research showing that many aspects of sexual differentiation are biologically influenced. He and others believe that whether you think you're a boy or girl probably is determined before birth.

Diamond says the case has major implications for the treatment of babies born with ambiguous genitalia. The textbooks tell you, "If you can't make a good penis out of it, make a vagina." Now it's clear that the policy should be, "Keep your knife away. Let the kids make a decision when they get older."

NIST Head to Step Down

Arati Prabhakar, director of the U.S. National Institute of Standards and Technology (NIST) since 1993, announced last week that she will be leaving in May to work for Raychem Corp. in Menlo Park, California, as senior vice president and chief technology officer.

Prabhakar's departure comes at a time of uncertainty for NIST, a part of the Department of Commerce that helps companies develop new technologies and sets industrial standards for everything from chemical reagents to lasers. When President Clinton took office in 1993, he raised NIST's profile by pledging to increase several-fold the budget of the agency's Advanced Technology Program (ATP), which gives grants to industry for research projects in competitive areas such as flat-panel computer displays. But congressional Republicans, among them former Science Committee Chair Robert Walker, assailed ATP as corporate welfare. Last year, ATP limped out of the budget battle with its funding cut to just $221 million—down $121 million from 1995.

The tangles with Congress are not to blame for Prabhakar's departure, says ATP chief Lura Powell. If she were going to bail out, "she would have left a year ago, when things were really bad," Powell says. Prabhakar, for her part, says, "I've been on my way to industry for 12 years now, and I'm finally going to get there. ... I've enjoyed being upstream [of product development] at NIST, but I really wanted to get in the middle of it."

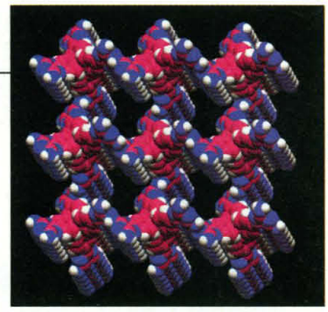
Robert Hebner, who has been acting director at NIST since Prabhakar went on maternity leave in January, will stay at the helm until the Clinton Administration taps a successor. "I'm just going to try to keep us on course," he says.

FORBES MAGAZINE

10 March 1997

"Thirty years from now, the big university campuses will be relics. ... [The] totally uncontrollable expenditures, without any visible improvement in ... education, mean that the system is rapidly becoming untenable. ... We [can] deliver ... classes off campus via satellite or two-way video at a fraction of the cost. The college won't survive as a residential institution."

—Peter Drucker, management consultant and author



J. WUEST

Miniscreen. Cross section of organic molecular scaffolding.

Designer Pores

It may not be long before organic materials start making a hole in the zeolite market. Zeolites are porous pieces of rock used in industry to separate out certain atoms or molecules. Chemists have been trying to develop an organic substitute whose pore sizes can be manipulated. But they have been thwarted by the fact that when some experimental molecules are taken out of the solvent in which they are formed, they collapse. That's because when pieces of the molecular framework lock together, they form channels that trap solvent molecules. When those channels are emptied, the flexible bonds won't hold firm.

Now, organic chemist Jim Wuest and colleagues at the University of Montreal say they are nearing their "holey grail" by using more rigid building blocks—molecules made of a carbon atom surrounded by various organic chemical groups. When scientists crystallized their porous "nanoscaffolding" from the solution used to brew it, they found that the hydrogen bonds holding it together stay firm even when most of the solvent is removed. In the 19 March issue of the *Journal of the American Chemical Society*, Wuest's team reports that, so far, it has created a porous solid in which 63% of the solvent molecules were removed—"a long way from the small percentages characteristic of other known organic solids," says Wuest.

Chemist Thomas Bein, at Indiana University in Purdue, wonders if even this structure would hold up under extreme conditions. But, he says, "There is certainly potential for the organic porous materials."