Critic Challenges MIT Women Report

Last March, a well-publicized report concluded that women faculty members at the Massachusetts Institute of Technology (MIT) had lower salaries and less lab space than their male peers (*Science*, 26 March 1999, p. 1992, and 12 November 1999, p. 1272). Now, the report is provoking a conservative backlash even as other universities take steps to emulate MIT.

Last month psychologist Judith Kleinfeld of the University of Alaska, Fairbanks, posted a critique on the Web that labels the MIT effort "a political manifesto masquerading as science" (www.uaf.edu/northern/mitstudy). In her analysis, prepared for the conservative Independent Women's Forum (IWF) of Arlington, Virginia, Kleinfeld says that MIT has released no data—other than percentages of each sex in the School of Science—to back up its conclusion that women scientists were maltreated. Kleinfeld asserts that women from the School of Science acted as their own "judge and jury," because they made up two-thirds of the MIT panel that did the study. And she claims the gender disparity in MIT's science faculty could be explained by other factors, such as research suggesting that talented women are less likely to be interested in science as a career, and that men outnumber women in the top percentile of tests for math ability. *The Wall Street Journal* lauded the IWF analysis in a 29 December editorial, saying that "to gussy up ... demands as objective science and then hide the data is a poor lesson for the students."

MIT School of Science Dean Robert Birgeneau dismisses the criticisms as "ridiculous." MIT could not allow public access to the data on which the report was based because "you have to promise confidentiality to get any results," he says. And to doubt the objectivity of the committee—which comprised several men, including physicist Jerome Friedman—"is insulting." The criticisms are unlikely to dampen other universities' enthusiasm. A swarm of schools have been setting up their own gender equity projects, including Harvard, the California Institute of Technology, and the San Francisco and Los Angeles campuses of the University of California.

Pint glass with flow pattern.

The Unbuoyant Bubbles of Guinness

Stuck in the lab waiting for your gels to run? Well, head down to the pub, order a Guinness, and stare at the glass as the creamy brew settles. Do the bubbles move up or down? Legions of Guinness drinkers would attest that they move downward. Physicists, however, say that's impossible: Everyone knows the higher buoyancy of gas bubbles must drive them up through the liquid.

Well, it turns out everybody's right. Clive Fletcher and his colleagues at the University of New South Wales in Sydney, Australia, recently attacked the problem with fluid dynamics software. They found that some bubbles do in fact move downward. The key, says Fletcher, is in the size of the bubbles and the viscosity of Guinness. Data provided by the Arthur Guinness & Sons company in Ireland indicate that bubbles in newly poured beer range in diameter from about 0.05 to 1 millimeter. Initially, they all rise, dragging the viscous liquid with them. Those bubbles in contact with the walls of the glass, however, are slowed on their ascent by surface tension. The result, says Fletcher: Liquid that rises in the center of the glass eventually gets pushed toward the edges and descends, sweeping the smallest and least buoyant bubbles with it.

"Even with something simple like this, there is actually a lot of complex physics going on," says Keith Hanna, a chemical engineer in the Evanston, Illinois, office of Fluent, a fluid dynamics software company. He notes that the effect—seen in tapered pint glasses—probably wouldn't work in straight ones, because they wouldn't encourage the same liquid currents to form.

Warming Up Wind Chill

How cold the air feels to human skin—what's known as the wind chill factor—depends on temperature and on the speed of the wind that helps wick heat from the body. The formula now in use is based on World War II experiments in which Army scientists measured how long it took for a container of water to freeze under different conditions.

But, says engineer Maurice Bluestein of Indiana University–Purdue University Indianapolis, the experiments overestimated wind chill: They failed to take into account the insulating properties of the container, and they were based on the assumption that human skin always stays at 30 degrees Celsius.

Several researchers have therefore been beavering away at a better formula. According to Bluestein's numbers, for instance, a –21 degree Celsius day with a 40-kph wind will make it feel like it's –36 out—not –42 degrees, as current calculations would suggest. Robert Quayle of the National Climatic Data Center in Asheville, North Carolina, has gathered a group of experts to vet Bluestein's and other new models. "We'll be making a recommendation to the Weather Service," he says.

Skull from Lantian.

China's First Hominid Museum

The home of famed Peking Man finally has a museum of paleoanthropology. Thanks to a donation of 1.3 million yuan ($157,000) from a Hong Kong philanthropist, the Institute of Vertebrate Palaeontology and Palaeoanthropology (IVPP) of the Chinese Academy of Sciences has opened a hall to house ancient fossils and tools collected at the country's 70 hominid sites. Exhibits include 10-million-year-old ape teeth and the half-million-year-old fossils of Lantian Man.

The fossils of Peking Man—half-million-year-old *Homo erectus* remains found near Beijing in 1929—are casts, as the originals were lost during the war with Japan in 1941. But officials expect more authentic fossils to come: The IVPP has launched a 5-year project that will devote about $125,000 a year to explore a half-dozen sites in China where signs of human ancestors have been found dating from 2 million to 8 million years ago.

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