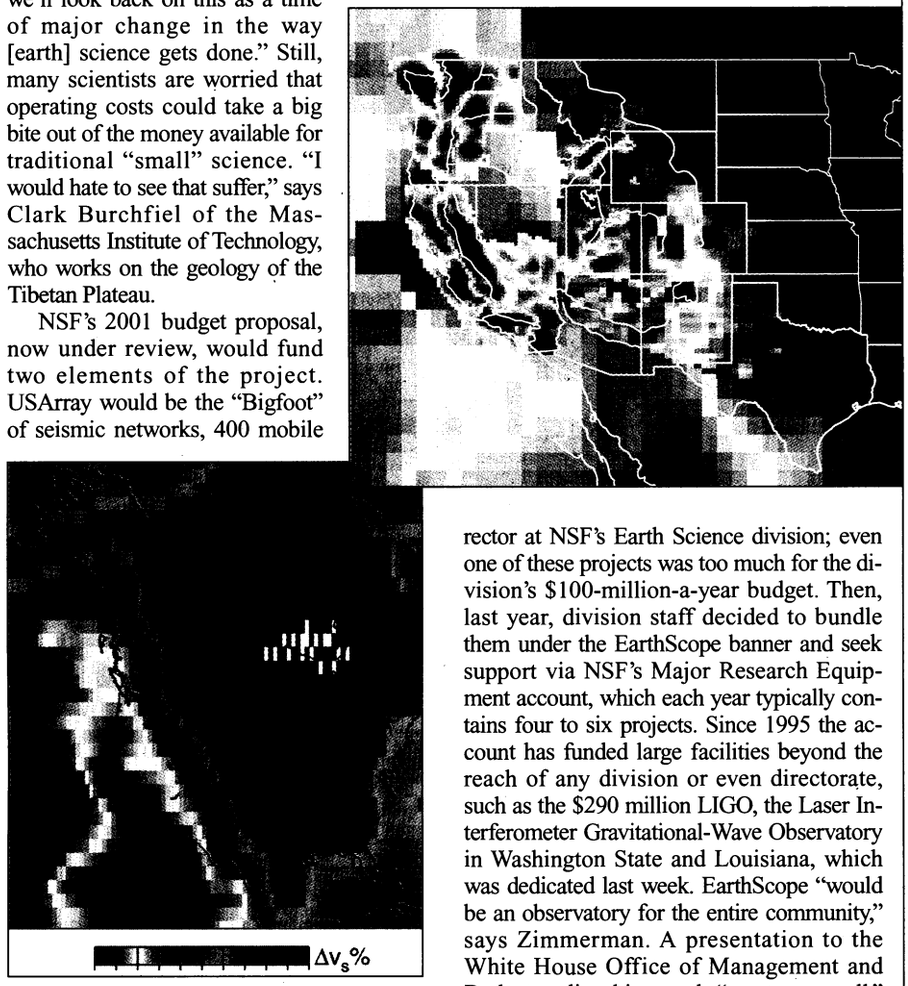
ing: The National Science Foundation (NSF) has proposed a $75 million project for its next budget in which the twain would meet.

The project, dubbed EarthScope, would create a downward-looking geophysical "telescope" to probe the continent from the surface to its very roots and beyond. NSF would like to make a $19 million downpayment in fiscal 2001 on a 4-year, two-part effort that would create a network of scientific instruments to analyze the continent over a range of spatial and temporal scales. Geophysicists seeing the subsurface in unprecedented detail would presumably join geologists dissecting surface rocks to answer questions that neither group can answer alone, such as how and why classic geologic provinces came to be juxtaposed.

"Times are changing, and I think people are changing," says Karl Karlstrom of the University of New Mexico, Albuquerque, who describes himself as a dyed-in-the-wool field geologist. "I think 10 years from now we'll look back on this as a time of major change in the way [earth] science gets done." Still, many scientists are worried that operating costs could take a big bite out of the money available for traditional "small" science. "I would hate to see that suffer," says Clark Burchfiel of the Massachusetts Institute of Technology, who works on the geology of the Tibetan Plateau.

NSF's 2001 budget proposal, now under review, would fund two elements of the project. USArray would be the "Bigfoot" of seismic networks, 400 mobile seismometers scattered to form a 1000-kilometer-square array that would be marched around the country. Embedded within the 1000-kilometer array would be a higher powered "telescope" of 2400 instruments targeted on individual faults, magma chambers, and mountains. After the seismic waves from earthquakes and explosions are formed into three-dimensional images and combined with geology, geochemistry, and topographic measurements, researchers might see how North America has been put together, what's holding up the Rockies, or how the Cascade volcanoes are being fueled from below. At a far smaller scale, the San Andreas Fault Observatory (SAFOD) would drill down 4 kilometers into the central San Andreas to find how continental blocks grind past each other to produce earthquakes.

Both SAFOD and USArray had been knocking around as separate concepts for 5 years or more with bleak funding prospects, according to Herman Zimmerman, acting director at NSF's Earth Science division; even one of these projects was too much for the division's $100-million-a-year budget. Then, last year, division staff decided to bundle them under the EarthScope banner and seek support via NSF's Major Research Equipment account, which each year typically contains four to six projects. Since 1995 the account has funded large facilities beyond the reach of any division or even directorate, such as the $290 million LIGO, the Laser Interferometer Gravitational-Wave Observatory in Washington State and Louisiana, which was dedicated last week. EarthScope "would be an observatory for the entire community," says Zimmerman. A presentation to the White House Office of Management and Budget earlier this month "went very well," Zimmerman told a recent EarthScope town meeting. The $75 million over 4 years would cover the hardware and its deployment; the geosciences directorate, of which earth sci-



A better view. Just as the shift from global *(bottom)* to regional *(top)* seismic imaging brings out detail 100 kilometers down, the USArray seismic network would further sharpen the view. Red shows slower seismic velocities; blue faster.

CREDITS: (TOP TO BOTTOM) E. HUMPHREYS AND K. DUEKER/S. GRAND

ScienceScope

Replay A University of Arizona (UA), Tucson, immunologist dismissed for scientific misconduct will get a second chance to plead her case. Arizona Judge Stephen Villarreal ruled on 16 November that former Regents Professor Marguerite Kay was wrongly denied legal representation during a hearing that led to her dismissal (*Science*, 5 November, p. 1076). Villarreal ruled that the university erred in barring Kay's attorney from speaking at the hearing and should grant a new one.

Kay feels vindicated. But Villarreal did not comment on the misconduct allegations or say that the UA must rehire her. UA attorney Jane Eikleberry says Kay will get a new hearing, though administrators "have not resolved" whether it will include another review of misconduct evidence.

Getting Credit High-tech executives have won a lengthy extension of a coveted tax credit. The House and Senate voted last week to give the R&D tax credit —which allows companies to deduct research expenses—a new 5-year lease on life. The credit expired 30 June, and industry had lobbied hard to avoid another single-year renewal of the perk, saying such short extensions wreak havoc with financial planning. Although backers failed to make the credit permanent, Representative James Sensenbrenner (R–WI), head of the House Science Committee, said the 5-year extension will finally "put an end to the start-and-stop approach" that long bedeviled the policy.

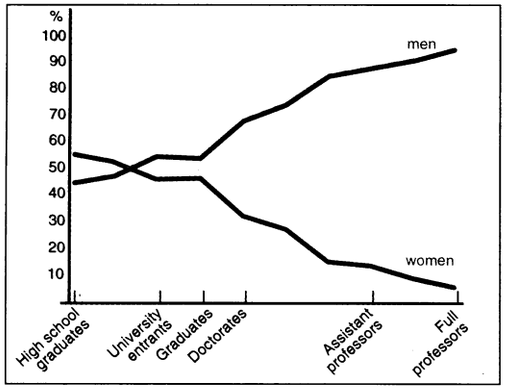
Feeding the Debate With activists dressed up as monarch butterflies protesting outside, the Food and Drug Administration (FDA) kicked off a three-stop listening tour about genetically modified food in Chicago last week. The meetings were set up to explain FDA's approval policy for transgenic crops, which critics say is lax (see p. 1664).

Overwhelming interest forced FDA to find a larger venue just 2 days before the Chicago session, and many of the speakers came out strongly against biotech crops. But that doesn't signal an impending change of public opinion in the United States, says Mike Phillips of the Biotechnology Industry Organization, who sat on one of the meeting's panels. "There are hundreds if not thousands of zealots," says Phillips. "But did the average man on the street come in and say anything? The answer is no." Crowds are expected at the remaining two hearings, in Washington, D.C., on 30 November and Oakland, California, on 13 December.

WOMEN IN SCIENCE

EU Confronts the Gender Gap

At the University of Lisbon, being a woman does not seem to be a huge impediment to a successful career in science: Almost 60% of all assistant and associate professors and 30% of full professors there are female. But in most other European research establishments, that's far from the case. Throughout the European Union (EU), the situation for women scientists is dire—on average, men outnumber women by around 20 to 1. This bleak picture emerges from the pages of a new European Commission report that, for the first time, pulls together statistical data from all over Europe. Besides fueling the gender debate in the EU with hard data, the report also sketches out several recommendations to offset the imbalance, such as more meticulous bookkeeping for gender-disaggregated statistics, better access to public records, and an affirmative action approach similar to that in the United States.



The scissor diagram. The proportion of women drops off dramatically further up the career ladder in Germany.

The report,* presented to EU research commissioner Philippe Busquin this week, is one of the outcomes of a conference on women in science held in April 1998. In the wake of the meeting, then-research commissioner Edith Cresson asked Mary Osborn, a cell biologist at the Max Planck Institute for Biophysical Chemistry in Göttingen, Germany, to assemble a group of experts and look in detail at the situation female scientists face in the EU's 15 member states.

The first obstacle the group—consisting of 12 top women scientists and science policymakers—faced was a profound lack of sound statistical data. Osborn says that, especially in industrial research, "it's almost impossible to get good numbers." Once the group had collected all the available data, however, a more or less consistent picture emerged. Although the science community in some southern European countries, such as Portugal, seemed to be a little less lopsided, the proportion of women in senior research positions was extremely small—in Austria, for example, only 4% of full professors are female, compared to almost 14% in the United States. The situation is even worse in independent research institutions and private granting organizations. "In some charities women didn't play any role at all," says Osborn.

This is in striking contrast to the gender distribution among science undergraduates, where every other student is female. "Women are not staying in science. They're not being promoted to the same level as their male colleagues," says Osborn. "This is a huge waste of resources. Society, which is paying for the training [of female scientists], is not getting a good return." Busquin agrees: "Women's potential is seriously underused. Many highly trained women are lost to science during their career."

Osborn's first take-home message is that "we need to push for better statistics, broken down by gender but also by academic rank. And a monitoring system, because if you don't have the numbers you can't really assess any progress." Also, given the severity of the problem, the group calls for a concerted action plan across the EU instead of piecemeal projects in individual member states. European legislators should mandate target ratios for gender balance in public bodies such as universities, grant assessment panels, and policy-making committees. Osborn points out that some countries, including Finland and Italy, already have such gender equality acts in place.

For the Sixth Framework Program, the next round of the EU's rolling multibillion-dollar research effort starting in 2002, the group suggests, among other things, that the commission should aim for a gender balance no greater than 60:40 on key scientific committees and evaluation panels by 2005, monitor grant applications and success rates by gender, and create a new European prize for excellent female researchers.

The report will also be presented at a meeting of national civil servants from across the EU in Helsinki at the end of the month, where "it may serve as a catalyst to kick off national debates in the member states," says Nicole Dewandre, the head of the Women and Science section of the EU research directorate. "This gives us a solid, quantitative argument for opening up the European science system to women," she says.

–MICHAEL HAGMANN

* "Promoting Excellence Through Mainstreaming Gender Equality." See www.cordis.lu/improving/src/hp_women.htm

CREDITS: (LEFT TO RIGHT) BMBF; ALEXEI MISHONOV

ScienceScope

Ensnared A Ukrainian scientist accused of selling "a national treasure"—plankton biodiversity data—to the West was charged last week with illegal currency transactions. A conviction could torpedo millions of dollars in research support to Ukrainian scientists from the European Union (EU).

The Ukrainian security bureau (SBU) is accusing Sergey Piontkovski (right) of the Institute of Biology of the Southern Seas in Sevastopol of diverting British and EU grant money—used to digitize the plankton data—to foreign accounts, rather than putting it in agreed-upon Ukrainian vaults (*Science*, 29 October, p. 879). Unnamed experts valued the data at more than $200 million in the 16 November *Slava Sevastopolya* newspaper, suggesting that the transfer was a rip-off. But Piontkovski says he has tried "to explain ... that countries invest millions in getting data, but the data themselves are free for scientific exchange." He denies that money ended up in personal accounts.

Piontkovski faces up to 5 years in prison and expects the SBU to bring lesser charges against at least one colleague. A trial could begin as soon as January. But a spokesperson for the EU's INTAS program —one of the researcher's funders—said "there will be consequences" for its funding in Ukraine "if the questions are not fully resolved by mid-January."

Retooling Sweden's research funding system appears headed for a radical overhaul. Responding to controversy over a streamlining plan released last year (*Science*, 20 November 1998, p. 1401), a government panel last week proposed replacing existing basic research councils with a single entity and trimming the number of government agencies with responsibility for applied studies from eight to three. It also called for new fora to discuss funding coordination and communicate with policy-makers.

The plan has won guarded praise from researchers, though some fear it could create artificial divisions between basic and applied studies. But panel head Hans Wigzell, president of the Karolinska Institute, hopes parliament will consider the plan early next year and that Sweden will begin 2001 "with a totally new organization."

Contributors: Eliot Marshall, David Malakoff, Martin Enserink, Richard Stone, Joanna Rose and Annika Nilsson