SCIENCE'S next wave
http://www.nextwave.org

Jobs for New Ph.D.s: Rosy Data Hide Some Thorns

With graduation dates fast approaching, Ph.D. students in the sciences are scrambling to finish their dissertations, many hoping to embark on careers as researchers. But is this realistic? Answers to that question will be presented in an open forum on the job prospects for new Ph.D.s. In the forum, representatives from six scientific organizations discuss their most recent data on Ph.D. employment and will be taking questions on *Science*'s Next Wave from 7 March to 2 May.

Some recent stories in the press have suggested that the employment picture for new Ph.D.s has improved in the last year. But the presenters in the Next Wave forum warn that no simple description can possibly capture the whole Ph.D. job market. Furthermore, they add that although more new Ph.D.s may be finding jobs, it's important to look at precisely where the new jobs are becoming available. Frequently, they say, it's not in the academic sector but in the private sector—and sometimes quite far from the fields where the newly minted Ph.D.s were trained.

An example of how the numbers can sometimes mislead comes from the American Chemical Society. Last year, ACS reported that unemployment was 21% for Ph.D. chemists. This year, the number plummeted to 10%. But on closer inspection, the drop seems less spectacular.

According to Mary Jordan, a senior research analyst at ACS and a forum presenter, the improvement is concentrated among experienced chemists who have been working and went back to school to get their Ph.D.s. Many of these people just continue in their jobs. "All we know," says Jordan, "is that they're fully employed." The rest of the apparent improvement, Jordan says, is due to an increase in the number of postdocs, people who "just opted out of the market early this year." The bottom line: The inexperienced chemistry Ph.D. didn't fare much better this year than last.

The employment picture for new Ph.D.s in physics also appears to be improving. But there's a hitch: It's not improving in physics. The number of unemployed physics Ph.D.s dropped from 5% in 1994 to 4% in 1995. And along with that improvement came a drop in the number of postdocs. According to Roman Czujko, another forum presenter and manager of the statistics division at the American Institute of Physics, the number of Ph.D.s who report being in postdocs 6 months after receiving their degrees dropped to 53% in 1996 after staying at around 60% for the past 5 years. "That looks like a real decline," says Czujko, although he adds, "we don't know if it's a 1-year fluke or the beginning of a trend."

That sounds good. Yet when the newly employed Ph.D.s were asked to identify their field, 45% of those in permanent jobs indicated something other than physics. Czujko says the hottest areas are engineering and computer software.

For new physics Ph.D.s who want a good academic job, the picture is grimmer. It's not that there aren't any jobs. In fact, there are almost exactly the same numbers of academic jobs and new hires this year in academic physics as there were 4 to 5 years ago. The problem is the competition. "It's a really volatile market out there," says Czujko, "and the young are getting clobbered." Corporate downsizing coupled with a strong U.S. economy has flooded the academic market with experienced physicists. "Young Ph.D.s," says Czujko, "can't compete very well against international superstars or people from major corporate labs with a long track record."

The job market is not all gloom and doom, however. And the differences in tone depend strongly on the field of science. Gail Cassell of the American Society for Microbiology (ASM) says the employment picture for microbiology Ph.D.s looks "very bright in industry" because of strong demand in biotechnology. But even when demand is strong, young scientists may have troubles. According to a spring 1996 ASM survey, employers in industry often say they have trouble finding qualified candidates for new positions—not because of a shortage of applicants, but because in the eyes of potential employers young microbiologists are too narrowly trained.

The data provided in the Next Wave forum by the discipline-based societies make it clear that the employment picture for new Ph.D.s varies among fields. But direct comparisons between fields are difficult to make. Societies collect their data at different times, ask different questions, and even define terms such as "permanent employment" differently.

To help make comparisons across all of the sciences, the Commission on Professionals in Science and Technology (CPST, an affiliated organization of the American Association for the Advancement of Science, publisher of *Science* and *Science*'s Next Wave) is carrying out a project to provide uniform data more quickly for selected fields. "My concern," says Catherine Gaddy, executive director of CPST, "is to get the data in student's hands by May of a particular year so that they know what happened to last year's class." The first round of CPST data will be available later this year—and will be presented on *Science*'s Next Wave.

Until better data exist, those who have just received their Ph.D.s will have to apply a healthy dose of scientific skepticism when they examine the numbers. A single number may be deceptive; furthermore, when the trends reflect improvement, it may not be in areas that have traditionally attracted people to science careers. But by carefully examining the data that do exist, those starting new careers may be able to put together their own road map to the future—with help from the Next Wave forum.

–Nicole Ruediger

This is one of a series of pages in *Science* linked to features on *Science*'s Next Wave, the AAAS/*Science* Web site for young scientists (http://www.nextwave. org). This story highlights a discussion forum on "The Employment Picture for New Science Ph.D.s" in the "Going Public" section of the Next Wave. The forum begins 7 March and remains open for discussion until 2 May.

For more information on the employment picture for new science Ph.D.s, please go to *Science*'s Next Wave, on the World Wide Web at http://www.nextwave.org, and look under the "Going Public" heading on the home page. There you will find essays by the people mentioned in this story and others from various scientific organizations with data on current Ph.D. employment trends.