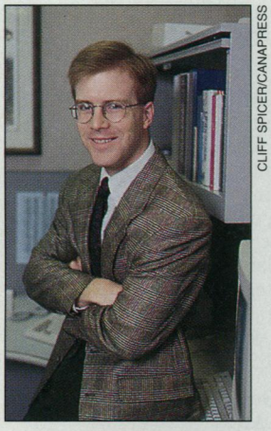
Taking Roads Less Traveled By Researchers

Ph.D.s are striking off into areas such as business and high school teaching, with mixed success.

Non-Physics for Physicists



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MICHAEL MCANDREWS/*THE HARTFORD COURANT*

Out of the lab. Theoretical physicist Kevin Dooley analyzes computer networks for a brokerage firm *(top)*. Alan Haught, a physicist, had a lot to learn when he turned to high school teaching *(bottom)*.

Kevin Dooley got a Ph.D. in theoretical physics last year, but, he says, "it was clear to me that it [the doctorate] would get me nowhere fast." Now he's a senior computer network analyst at a Toronto brokerage firm, Schotia McLeod. "It ain't R&D, and it has very little to do with the quarks and gluons of my thesis," he says, but the transition from the quantum world to the business world was surprisingly painless. "My impression is that people are willing to hire Ph.D.s in relatively unrelated fields because the only really important qualification is the ability to think quickly and solve difficult problems," he says.

Like Dooley, many physicists are landing on their feet in other endeavors, according to a survey on "nontraditional careers for physicists" being conducted by the American Institute of Physics (AIP) and the American Physical Society.* Gregg E. Franklin of Brookhaven National Laboratory has so far mailed out 88 questionnaires to physicists who are now employed in business and industry, asking them to describe their work and how they feel about it. He hopes the results will help researchers "see how other physicists have dealt with nonresearch career alternatives."

AIP found physicists in all kinds of businesses, from venture capital to finance to running their own companies. From the 47 questionnaires returned so far, they appeared to find plenty of challenges—in the design of electronics products, for example, or in doing market analyses. One of the benefits most frequently mentioned by survey respondents was working with others. "I interact with coworkers, suppliers and customers at all levels and report directly to the CEO," wrote the quality manager for a small computer sales company in Ohio, who got his Ph.D. in geophysics in 1981. "I no longer work in an isolated laboratory."

There are reported drawbacks too, of course. These include inadequate resources, tedious work, too much bureaucratic paperwork, long hours, heavy workloads, and tense competition. A 1984 Ph.D. who heads a market risk analysis unit at a large Chicago corporation complained of "very long hours and intense pressure to produce accurate results. Workplace is incredibly political and throat-slashing." Perhaps not so different from the lab, but Franklin points out that, unlike in the world of high finance, jobs aren't on the line if an experiment doesn't work out.

"Overall," says AIP's Jean Curtin, "respondents reported positive experiences." Most are not sorry to have left the academic environment. And only six of the 47 said they would avoid an advanced degree in physics if they could do it all over again.

–Constance Holden

Tough Course: High School Teaching

When physicist Michael R. Cohen was laid off from his defense contracting job in Albuquerque, New Mexico, he started substitute teaching in the local school district to make ends meet. But he soon found that he was good at it. "The whole experience was very energizing," Cohen says. However, when a permanent job opened up, he was told he lacked the qualifications.

Scientists interested in high school teaching seem to be getting double messages these days. They are encouraged by reports of shortages—in 1991, 13% of the math students and 5% of the science students in public high schools were taught by people with neither the education nor the training for the job, according to the Department of Education. Yet they are discouraged by sticky certification requirements.

And while there may not be enough good science teachers, there is no dearth of teachers. "The notion of a shortage is overblown," says Carolyn Carter of the Appalachia Educational Laboratory in Charleston, West Virginia. Teacher attrition is at a record low, and many education departments are retraining people already in their ranks to teach science.

Even where openings do exist, scientists must usually be certified—a process requiring 1 to 2 years of graduate work in education combined with unpaid student teaching. Scientists often disparage such requirements. "I think we know a lot more science than science education majors. And I've seen a lot of people come out of education programs that can't teach worth beans," says chemist Robert Zellmer, a lecturer at Ohio State University who is looking for a high school teaching job. But Carter counters that "people who have always been good at science and math are not always going to be able to work well with children who are not as successful."

Knowledge, in short, isn't everything. "Knowing my subject…was not what got me through my first year teaching," says physicist Alan Haught, who began at Weaver High in Hartford, Connecticut, last year after a 30-year research career at United Technologies Corp. To get certified, Haught had to take classes on learning styles, physical and mental handicaps, classroom discipline, and teen social problems. "I've never worked so hard," he says.

Getting into teaching could become easier in the future. Some localities waive or defer certification when they cannot fill their needs in poor or rural areas, and many states are beginning to simplify the process. Arthur E. Wise, president of the National Council for Accreditation of Teacher Education in Washington, D.C., says 200 schools of education now offer alternate programs that take less than 2 years.** Paid internships are also being substituted for unpaid teaching stints—an arrangement Wise believes may become the norm. These developments should make it easier for scientists to enroll in a teaching career.

–Susan Chollar

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* To be included in the survey, contact Trish Lettieri at AIP, One Physics Ellipse, College Park, MD 20740–3844, USA. Fax 301-209-0867.

** For information on routes into secondary school teaching, contact Recruiting New Teachers in Belmont, Massachusetts at 1-800-45TEACH.