SHRINKING WORLD II

Surprise! Foreigners Can Get Jobs in Japan

TOKYO—The global seismology seminar is just one of many available to graduate students in earth and planetary physics at the University of Tokyo. What makes this one different, though, is that the eight to 10 nascent Japanese earth scientists in the audience are being taught by a gaijin professor. "Gaijin" is the Japanese term for foreigners, and precious few of them can be found teaching anything but English in this island nation. One of those few is geophysicist Robert Geller, who gave up an assistant professorship at Stanford University 9 years ago to move to Japan, where he became the first non-Japanese hired directly into a tenured position at a national university.

Today, the number of non-Japanese faculty at national universities is still infinitesimal—201 out of some 37,000; and only 17 of those hold tenured appointments equivalent to those of their Japanese colleagues. Although the Ministry of Education recently called for more openness to foreign faculty, many schools, including three of the most prestigious—Kyoto, Osaka, and Tsukuba universities—still forbid grants of tenure to non-Japanese faculty members.

The slow pace of change may be owing partly to the fact that funding in the public sector has been looking pretty meager these days. Indeed, the condition of labs at the national universities and many of the national research institutes—peeling paint and outdated equipment—has become so acute that it is something of a national embarrassment, affecting even the elite University of Tokyo where Geller teaches. Geller says he's getting adequate support for the computers he needs to analyze earthquake data. But scientists doing experimental work are being hit badly by the funding crunch. There is no money for technicians, which leaves faculty and students trying to maintain equipment and tend lab animals themselves.

Corporate research. In the world of corporate research, however, the picture is somewhat different. That's where the lion's share of opportunities for foreign scientists lies, and where there's definitely been a change in attitudes—as testified to by the presence and prominence of carbon chemist Thomas W. Ebbesen. The Norwegian-born Ebbesen has been attracting worldwide attention with his work on carbon nanotubes at an NEC lab in Tsukuba City. A permanent NEC employee, Ebbesen co-manages a six-person research group. And for every permanent gaijin like Ebbesen, Japanese laboratories now are hiring several contract workers from foreign lands.

The names of companies hiring foreigners are recognizable to anyone who has ever shopped for a car, a stereo, or a computer—Toyota, Sony, Hitachi, Toshiba. A 1992 survey by the Science and Technology Agency of 1318 companies found 777 non-Japanese researchers; of these, more than 400 are in the automotive, electrical equipment, and telecommunications and electronics industries. At the automakers, the work tends to be development, and the foreign employees, engineers. At the giant electronics firms, foreigners are filling niches in the whole process from basic research to product development. But for foreign R&D scientists, one of the principal attractions of Japan is that at a time when many U.S. institutions are debating the value of basic versus applied research, Japanese companies maintain a growing interest in basic science and collaboration with scientists throughout the world. This means the Japanese are especially welcoming to foreign scientists who bring not only "pure" research expertise but international contacts as well. As a Sony official says, "We recruit people who specialize in, or have particular knowledge in a research area that is immature or not conducted in Japan."

The "basic" research is, the companies like to say, "oriented," meaning that they see it as at least potentially connected to their businesses. But at the electronics and telecommunications firms that employ a large portion of the foreign scientists, oriented research can range from studying basic material properties to thinking about chaos theory to work on voice recognition. No matter what the topic, foreign scientists here say projects in the private sector are well funded by any standard. Positions may not be as easy to find as they were a few years ago, due to Japan's recession, but the situation is

Researching the Japanese Job Market

Japanese government fellowships and such programs as ERATO are advertised in leading journals. But private companies typically do not advertise their prime jobs, nor do major universities. As a result, even more so than in the United States, personal contacts are the most effective way of locating science job opportunities in Japan. Robert Geller had long maintained contacts with Japanese seismologists, having been introduced by Hiroo Kanamori, one of his professors at the California Institute of Technology. When a position opened at Todai (the University of Tokyo), "they asked me if I was interested," he says.

Contacts—even remote ones—are just as important for corporate labs. When finishing his Ph.D. in mechanical engineering at the University of Minnesota, Evan Whitby asked a professor from Caltech he met at a conference if he knew of any postdoc positions. That professor had been collaborating with a Japanese professor who, in turn, had been asked by Hitachi to find a researcher interested in particle dynamics. With this roundabout introduction, Whitby landed a visiting researcher position at Hitachi's Mechanical Engineering Research Laboratory.

Douglas Tweet had no contacts, but he did know about the Photon Factory at the National Laboratory for High-Energy Physics in the science city of Tsukuba. While still finishing his doctorate, he tracked down published reports on Photon Factory work. "I just looked through to see which groups were working on the kind of stuff I wanted to do," he says. He wrote directly to the names listed last on research reports, figuring those would be the most senior people. NEC was interested from the start and he was hired following two interviews—one with an NEC researcher attending a conference in the States, and one at NEC's Princeton research lab. "It was so easy," says Tweet.

For more formal routes, information on ERATO projects and various Japanese government grants and fellowships is available through the National Science Foundation (NSF) in the United States, the Royal Society in the U.K., and comparable scientific organizations in other countries, many of which also have grant programs that support researchers coming to Japan. NSF has also compiled a Directory of Japanese Company Laboratories Willing to Receive American Researchers, including contact information for 154 companies.

–D.N.

expected to turn around as the economy recovers. But there are a number of reasons why enterprising young Ph.D.s shouldn't simply grab their resumes and hop on the next flight to Tokyo.

Cultural hurdles. The most obvious challenge is, of course, the language. On one hand, says Geller, "Giving lectures on a technical subject is very easy—you just have to learn the vocabulary. There are no cultural nuances." But a sophisticated grasp of Japanese becomes important, emphasizes another American, Robert Lewis, if scientists want to move up within an organization. Lewis, who has a Ph.D. in organic chemistry from the University of California, Berkeley, left Shell Oil in 1986 to join the Kuroda Solid Surface Project in Japan, one of the Science and Technology Agency's Exploratory Research and Advanced Technology (ERATO) projects, and today is associate director of the Tsukuba Research Consortium, an industry-supported research facility. He points out that since he must now grapple with budgets and administrative duties—not to mention personal dealings with staff and colleagues—improving his Japanese is his biggest challenge.

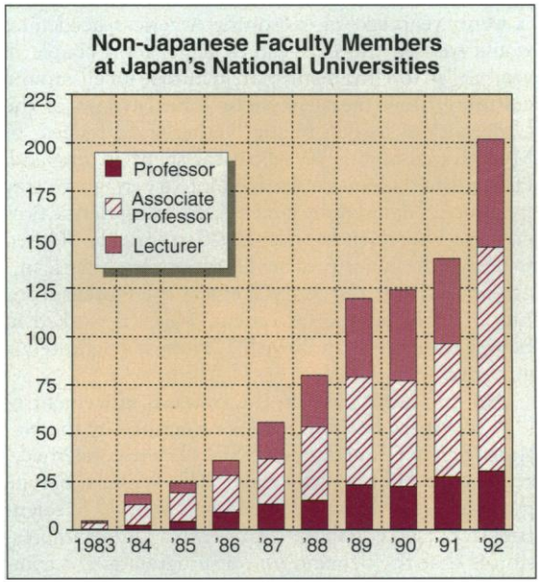
Other, more subtle problems for gaijin include the need to adhere rigidly to work schedules and corporate procedures. An official of one Japanese firm observes that Europeans fit more easily into the Japanese corporate lab culture than do "individualistic" Americans. And foreign scientists may sometimes find that even after months and years of work in Japan, they are treated as "special guests" rather than colleagues. The "guests" find they are not told of meetings and are left wondering why.

Some researchers, too, feel they have been hired as "token gaijin" just to lend an international atmosphere to a lab. Therefore, because cultural differences can lead to misunderstandings, veterans advise foreign scientists considering a Japanese job to arrive with a very clear idea of the work they want to do, the people they want to work with, and acceptable conditions of employment. As Ebbesen says, "People should know where they are going and why, and not come just because it is Japan."

Ebbesen himself came to Japan with very specific ideas of what he hoped to be doing. Having left Norway as a student, he already had academic and research experience in the United States, Europe, and Japan when he decided to return to Japan permanently 5 years ago to set up a molecular science research group at NEC in cooperation with Katsumi Tanigaki, a scientist who was already working there. Ebbesen first came to Japan on a National Science Foundation grant, then spent an additional year as a visiting professor at Tsukuba University. There he made the contacts that eventually brought him to NEC, and in the meanwhile he started to get a good handle on the Japanese language. He began work on 1-year renewable contracts, as virtually all non-Japanese researchers do. The understanding was that if the arrangement proved mutually satisfactory, he would become a permanent NEC employee. He became one after 2 years.

"For the kind of research I wanted to do, it was necessary to build up something, not to work on short-term assignments," Ebbesen says. And at NEC, which may well be the largest corporate employer of non-Japanese researchers, he found stable and generous funding. His group's attention-getting string of papers on carbon nanotubes demonstrates, Ebbesen says, that foreigners can pursue important research in Japan working in cooperation with Japanese scientists.

Of course you don't have to make such a major commitment to get experience in Japan. There are enviable opportunities in a variety of government fellowships and corporate visiting researcher positions, and people filling such positions aren't confronted by as many cultural quandaries as are permanent staff. But exposing yourself to a foreign culture may well change your life. Take U.S. mechanical engineer Evan Whitby, who got a contract job at Hitachi where he has been studying how semiconductor fabrication processes generate particles that contaminate chips. Whitby says before he came, he had no particular interest in Japan. But he has found working here "an extremely powerful experience" that has given him a new long-term goal: facilitating scientific exchanges between the U.S. and Japan. This past August he was preparing night and day to fulfill a more personal goal: presenting a paper on his research to the Japan Association for Aerosol Science and Technology in Japanese, after just two and a half years of studying the language.



Nowhere to go but up. The number of non-Japanese faculty at Japan's national universities is growing from a small base, but only a few manage to get tenure.

Anyone contemplating either a short-term stay in Japan or a more permanent shift has not only cultural gulfs to cross but personal matters to consider. Noting such things as the expense and scarcity of international schools, Geller says, "Obviously, if the researcher is single and has no dependents the complications are minimized." But not the emotional ones. "If I were single, I'd probably be going out of my mind," says Douglas Tweet, an American physicist on a 3-year assignment at NEC, who lives in bucolic Tsukuba with his wife and their 18-month-old son. Living in company housing for married employees, he says, provided an instant circle of friends. But he says that single researchers in the area spend a lot of time trekking to Tokyo in search of night life and companionship, still strangers in a strange land.

–Dennis Normile

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