

tions and higher status abroad or in industry.

The situation is so acute that the concept of a postdoctoral fellowship — a short training period for a scientist with a PhD — has to a large extent fallen by the wayside. The terms 'short-term contract staff' or 'contract researchers' have become common currency, reflecting the fact that being a postdoc is now seen as a way of life. So it is no surprise to find that two-thirds of research staff in biochemistry and clinical sciences in the United Kingdom, and half of all researchers in physics, are on short-term contracts.

Nevertheless, according to Philip Diamond of the Institute of Physics (IOP), the number of postdocs in physics has grown at least fourfold in the past few years. A recent informal study conducted by the IOP revealed a vociferous crowd of contract researchers complaining of exploitation and expressing the fear that they will be 'dumped' when they become older and more expensive to keep on. Postgraduate students, however, expressed determination to continue in their own research area 'come hell or high water'. What is missing from the system, says Diamond, is career advice, urgently needed before scientists reach the watershed of their 30s.

Contract researchers in the United Kingdom have one piece of good news. A new concordat agreed between universities and grant agencies gives better employment conditions, such as recognition of previous experience when setting salary levels. The concordat will be fully launched later this month.

The United Kingdom differs from other European countries in that there are many more different sources of fellowship funding, including many charities (foremost among them the Wellcome Trust), as well as the national research councils.

The situation in France is particularly tough. In 1995, 10,000 young scientists completed their PhD theses, and this year the figure is expected to be as high as 13,000. Those wishing to stay in academic research will have to fight for a total of 2,500 permanent research assistant positions a year at the CNRS (the chief French research organization) or a post as associate professor at a university.

Those wishing to go into industry will find help from the non-profit-making Bernard Gregory Association. Its director, Marc Joucla, says that the association arranges around 400 industrial positions each year to scientists with PhDs. But he warns that too many years of postdoc experience

have a very negative effect on chances of a job with industry. It is important not to let too much time elapse after getting one's PhD, he says.

There are virtually no postdoctoral funding programmes in France — fewer than 400 French postdocs work in their home country at any time — so scientists have to look abroad for opportunities. An estimated 10,000 young French scientists are in postdoctoral positions abroad. Most report difficulties in returning home later, as they say that personal contacts are much more important than they should be for senior appointments, so people who have worked abroad are at a disadvantage.

It is interesting that the United States is no longer the favourite destination for European postdocs. Although 55 per cent of travelling postdocs went to the United States in 1992, by 1994 this number had fallen to 43 per cent. Over the same time period, the European Union emerged as the favourite destination, now hosting 45 per cent of postdocs compared to 30 per cent in 1992. The European Commission's Human Capital and Mobility (THR) Programme, which has now been succeeded by

the Training and Mobility of Researchers Programme, has been immensely popular as a means of getting postdoc experience in another European country. The commission has recently relaunched its postdoc programme under the name Marie Curie Fellowships. Last year it received nearly 25,000 applications; 850 fellowships were granted. Similarly the European Molecular Biology Organisation in Heidelberg, which offers around 150 fellowships a year, attracts nearly twice as many applicants now (around 900) as it did 5 years ago. The number of awards unfortunately has not significantly changed.

The problems, and the accompanying lack of information about employment prospects in France, have spawned something unique in Europe — self-help groups. A group of PhD students called 'hotdocs' communicate news and information over the Internet. Postdocs can be helped by the group called ANDES (Association Nationale des Docteurs Ès Sciences) which publishes an annual guide to finding fellowships and postdoctoral positions abroad.

Alison Abbott & Gabor Stiegler

Postdoctoral positions galore in Japan

Tokyo. Opportunities for postdoctoral research in Japan for both Japanese and non-Japanese scientists will increase dramatically over the next five years under a 5-year government plan to promote science and technology. The plan, approved by the Japanese cabinet in June under a new law passed late last year (*Nature* 378, 227; 1995), requires the government to double the number of domestic postdoctoral fellowships for young Japanese scientists to about 10,000 by the year 2000. Similarly, the number of fellowships for non-Japanese scientists offered under two government schemes will increase dramatically from the present level of 760 a year to 2,050.

Both the Japan Society for Promotion of Science (JSPS) and the Science and Technology Agency (STA) offer postdoctoral fellowships for non-Japanese. Introduced in the 1980s, the schemes are open to scientists throughout the world and offer generous tax-free salaries and accommodation allowances (see *Nature* 362, 867; 1993). At present, JSPS offers 420 fellowships a year for research in universities and university-affiliated institutes, while the STA provides 340 for research in national research institutes and other government-related research laboratories. The JSPS scheme will be expanded to 1,050 people and that of the STA to about 1,000 over the next 5 years.

The Japanese government has in the past experienced difficulty in filling all the positions, partly because of poor promo-

tion of and publicity for the schemes and partly because Japan does not offer a particularly appealing research environment, especially for researchers from developed countries of the West. But in recent years, there has been quite strong demand for the fellowships from many countries, with the exception of the United States, which is still failing to fill its unofficial quota — when the STA scheme was launched in the late 1980s, the Japanese government for political reasons hoped to fill half the places with US scientists, but this goal has never been achieved.

The 5-year plan calls for radical changes and improvements in the government research system in Japan, including a 50 per cent increase in government funding for science and technology and large increases in the number of technical support staff (of which there is a chronic shortage in universities). Thus the research environment in Japan may well be dramatically improved by the end of the five-year period, making it a more attractive destination for non-Japanese scientists.

But opportunities for full-time employment in Japan for non-Japanese are likely to remain limited. Foreign scientists are a tiny minority on the faculty of Japanese universities, and although the private sector was employing fairly large numbers of foreign scientists a few years ago, employment opportunities have declined with the recession of the Japanese economy. Foreign scientists should thus think carefully before making a move to Japan.

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