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## Few jobs, but plenty of job security

THE graph on our cover this week encapsulates perhaps the greatest problem confronting British universities at present—that of replacing staff.

For every year since 1960 we looked at the classified advertisement section of *Nature* for the first issue in May and the first issue in November. Any British university post of the level of lecturer or above scored one; temporary posts at the lecturer level (there were very few) scored half. The vertical axis therefore represents, roughly, a measure of the long term openings in science in British universities. The graph could be criticised, no doubt, in all sorts of ways as an inadequate sample but the message is clear. Universities have largely stopped hiring, or 1974 contained a statistical fluctuation, or *Nature* has been abandoned as a medium for advertising university posts (British universities generally advertise in two different places). The last proposition was easy to dispatch: nowhere else is there a boom in university advertisements. Statistical fluctuations were ruled out by looking at a larger sample for 1974. So there just aren't the jobs available.

The peak in the mid-1960s, the other salient feature, arose, of course, from the rapid university expansion at that time; indeed in doing a numerical analysis we frequently had difficulty in deciding how many posts were being offered when a university announced that 'several positions are available'!

The policy that university administrations have adopted in the past year, during which severe financial stringency has dictated a widespread freeze in hirings, has been to treat

individual posts which have fallen vacant on their respective merits, and some have said that a year or two of straitened circumstances might positively do good. This is untrue for two reasons. First, when a system with such a high job security ceases to operate normally it works to the detriment of the bright young man trying to move from contract-based employment to a more stable career. Disruption of his job prospects during the most intellectually fertile period of his life represents a tragic waste of education and talent. Second, just as bad news on employment in the chemical industry a few years ago rapidly had an impact on the image of chemistry in schools, it cannot be long before the failure to fill university posts begins to impress students at all levels with a belief that the academic life is being downgraded in national priorities, and that they should not set their sights in that direction. Even if this were a good thing, it is most undesirable that the control should come from external influences rather than from genuine policy decisions made after rational discussion.

It is unlikely that the brakes will be released from universities in the near future; the government doubtless has many other demands on its money which it perceives as more deserving than the universities. In that case, now is the time for universities to respond to the crisis in an imaginative way. Industry, confronted with a constant budget, would find ways of persuading senior or unproductive staff to leave and it is often possible to do this without any great loss of human dignity. Tenure is both a blessing and a curse to the university system; might not the golden handshake alleviate some of the curse?

## Unsuitable for children

PROFESSOR Eric Laithwaite did not, as was widely predicted, quite urge his audience of schoolchildren at the Royal Institution Christmas Lectures (and the several hundred thousand television viewers) to regard Newton's laws as open to some fairly fundamental doubts. He did not say that he had found a way of counteracting gravity. What he did, however, in the course of his six lectures, was in a way more damaging to the education of young scientists; he mixed parlour tricks with complicated machines, he chose to enlist the mystified children on his side in a battle with conventional scientists—'abominable no-men' as he called some of them—and, worst of all, he emphasised experimentation to the almost complete exclusion of explanation.

The scene was as it ever had been—a lecture hall full of well groomed children on their best behaviour. One wondered idly if there were still nannies, governesses and footmen waiting outside in carriages. The audience was prepared to applaud dutifully the most trivial thing. And the experiments—well they can never have been bettered for ingenuity and visual impact.

But science demands rational explanations. It is simply no good demonstrating at length the celebrated mirror problem (if right becomes left, why doesn't top become bottom?) without going to equal pains to put in children's minds at least some sort of answer. It is no good demonstrating a motor that reverses direction when the voltage

is increased without saying why. And it is positively harmful to venture into the world of gyroscopes, a confusing world for many a competent scientist, without a clear understanding of the rather well known laws of angular motion, an extensive reading of the not inconsiderable nineteenth century literature on gyroscopes and tops and an ability to impart the textbook explanation lucidly. The theory is indeed dry and unattractive; all the more challenge, then, to get it right and still hold your audience. Professor Laithwaite chose, instead, to present the understanding of gyroscopic motion as something which had been languishing for more than a hundred years and which scientists as a whole had chosen both to ignore and to suppress questions on.

One example of the misleadingness of demonstration must suffice. A gyroscope slowly precessing on an 'Eiffel tower' seems to experience no centrifugal force, said Laithwaite, otherwise surely the tower would slide, which it didn't do even when the base was on ice, a surface with a very low coefficient of friction. But not low enough. The centrifugal term is sufficiently much smaller than the normal reaction from the weight of the gyroscope (perhaps one hundredth) that sliding requires an even more slippery surface than ice.

These lectures, said Professor Laithwaite, were not the time nor the place to go into the mathematics; but if not, it was neither the time to launch ideas which could only be criticised by mathematical analysis. □