

Letter to the Editor

Liaison Between the Electronics Industry and Universities

DEAR SIR,—The article by Mr. F. N. Sutherland in *N.E.C. Review* for January 1968 (Vol. 4 No.1, p. 5) is interesting and important, and is much better-balanced and less prejudiced than most pronouncements from industrial leaders. It shows some awareness of what is happening in the universities *now*, and this is unusual; so many industrialists seem to judge universities by what they were when they were students. It is therefore in a spirit of extending the discussion and information that I am now writing, rather than with the intention of making any very serious criticism.

There are, of course, a few statements in Mr. Sutherland's article where the old prejudices show through. 'The research workers (in a university) . . . are usually either inexperienced or have teaching duties . . .'. Whether we are typical or not I do not know, but in my Department at Birmingham the 25 lecturing staff average just over 6 years each of outside experience; and although some of this experience is in Government organizations, the average experience of *commercial* industry is $3\frac{1}{2}$ years. Of the 70-odd research fellows and students, about half have had postgraduate industrial experience. The idea that teaching is inimical to worthwhile research is a fallacy which unfortunately is not confined to industrial circles; my experience is, however, that the best teachers are the best researchers. Teaching highly-intellectual and critical students means clear thinking and understanding of fundamentals—something that would help industry quite a lot.

Mr. Sutherland says 'It is imperative that a fair proportion of graduates shall complete their university courses with a desire to enter industry, and a conviction that in doing so they are embarking on an interesting and rewarding career'. Our students have lectures on government and industry, on industrial research and economics; and each year I tell the final-year undergraduates that they ought not to want to stay on in the University but should go out into the outside world for some years and then see if

they want to return to the University. The fact that so many really able and well-adjusted men do want to return is a sad reflection on the interest and reward which industry offers them. Most of our graduates do enter industry on first graduating, and many others do after getting Ph.D's. I doubt, however, if many really have the conviction that 'they are embarking on an interesting and rewarding career'; industry's image is not all that convincing.

It is interesting that Mr. Sutherland refers to the collaboration between our University and the Royal Radar Establishment as a one-way arrangement: 'A number of individuals in the R.R.E. have recently been appointed to part-time academic posts in the University of Birmingham'. The arrangement is actually a two-way one, and a number of University staff have honorary staff appointments at R.R.E., spending perhaps one day a week there. Clearly Mr. Sutherland instinctively feels that university staff have little to offer the outside world; but although we value very highly indeed the help which R.R.E. staff have given us, I feel sure the Director of R.R.E. would agree that the University staff have made a significant contribution at R.R.E.

In my Department we have made a very real effort to establish contact and mutual assistance with industry. One of our postgraduate divisions is actually named the 'Industrial Division' and is headed by a professor who came to us direct from a managerial post in industry. All divisions have endeavoured to set up collaborative research and training programmes with industry. Although like many university departments we have numerous research projects sponsored by industry (as well as by government and nationalized bodies) we have several which are actually joint projects, done partly in the University and partly in industry, and we have an arrangement whereby research students may do the greater part of their research in industry, and at most times we have two or three students doing so. For years, too, we have used for final-year undergraduate projects a number of

proposals put up to us by industry, and some of these have actually been carried out in the industrial premises. It is fair to say that these collaborative arrangements involve all sorts of difficulty because of the different conditions and objectives in industry and universities, but we feel it is well worthwhile to struggle for the success of such liaison.

Mr. Sutherland has been kind enough to refer to the short advanced courses which we arrange each year for people from industry. Like him, we feel this is worthwhile, but there is a danger here of creating the same situation that arises with the one-year postgraduate courses: namely, too many courses for too few students. Now that several government laboratories operate large postgraduate teaching units in addition to nearly every university department, there is a distinct likelihood of too much talk and too little action in postgraduate work.

I believe that the future prosperity of our industry will depend on the quality of university research. For long-term success it is imperative that the intellectual standards of university work are not sacrificed to any god of short-term utility and short-term commercial success. I am sure we can 'keep our feet on the ground' while still insisting on proper intellectual quality. There is no real conflict between usefulness and quality, but some of the pressures currently being applied to universities are dangerous.

Yours faithfully,

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