

7th May, 1962

Mr. S. P. Ross,  
Committee on Higher Education,  
Old County Hall,  
Spring Gardens,  
London, S.W.1.

Dear Mr. Ross,

Use of NIRS facilities for postgraduate training

I am writing on this in response to your letter of 5th March to Willis, and am sorry to have been so slow to respond.

Our Royal Charter entitles us "to train scientists and engineers in matters relating to nuclear science", and post graduate training of nuclear physicists occurs on a substantial scale in the natural course of research work on our machines; our university visitors bring their research students with them. In addition, we already have one case of a research student who graduated at a university with no scope for nuclear research and who has been placed under our supervision by his professor; no doubt there will be a few more cases of this kind in the future. In nuclear physics our facilities for postgraduate training and research are being exploited satisfactorily and on an increasing scale, and the universities are fully involved in their own right.

The scope for training and research in other fields of physics and engineering is considerable but has not yet been fully exploited. Some years ago we began to provide research problems connected with the design of our accelerators for a number of external students of London University, in collaboration with University College, London. Since the professor of physics was interested in the same problems, the arrangement took the form of an Agreement between the Institute and the College under which the Institute paid the expenses of the work, including the support of the students who worked here under our supervision. This scheme was most successful. Several key problems in the acceleration of particles to high energies were solved, and several Ph.D's were awarded by London University. The majority of the students eventually joined our staff, but one is now teaching in Africa and continuing research with apparatus which we have lent him, and another took a post in industry. We intend to broaden and extend this scheme, but to place much more emphasis on careers elsewhere, and much less on taking the people into our own employment. I confess that at the beginning of the original scheme we were mainly concerned with our own staffing problems.

There are, of course, some pitfalls. It is important to avoid the risk of stripping the universities of their best research students. We have facilities for work in some fields which are not often covered in universities but which, nevertheless, are a good training ground for careers in industry and Government Establishments; an example is the physics of accelerating machines and their ancillary apparatus. To the extent, therefore, that there are more good students than research opportunities in the universities there should be no great difficulty provided that we collaborate closely with the university staff. We intend to approach the students only through their professors. Some



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professors are unhappy about the scheme, because they already find outlets for all their students whom they consider suitable for postgraduate research; in these cases of course we withdraw. Others are enthusiastic, especially on the engineering side.

The university regulations for higher degrees are a minor handicap. There is no problem for graduates of London University. In other universities it is possible for some part of the research students' time, sometimes as much as two years, to be spent on approved research at a laboratory such as ours, but this restricts the range of suitable problems to those of joint interest to ourselves and the university. It is to be hoped that these regulations will be flexibly interpreted and perhaps relaxed.

The problem of the students' remuneration is more serious. There would evidently be no objection to holders of D.S.I.R. grants undertaking approved research at the Rutherford Laboratory. Opinions seem to differ as to the adequacy of the number of grants available in relation to the quality of the students, but if more grants were needed than D.S.I.R. could provide, the mechanism of Institute Agreements with the universities could be used to support the students. The real problem is to determine the amount to be paid and, in particular, the amount of a N.I.R.N.S. supplement to the normal D.S.I.R. award to enable a man to live and work at Harwell. We could presumably be allowed to pay, and would be willing to pay, the amount which the student might have been expected to earn by teaching to the extent approved by D.S.I.R., and also any excess cost of hostel fees and travelling expenses as compared with lodgings near his university. But many believe that the present scale of D.S.I.R. grants is too low, and students coming to work with us would rightly feel that they were losing something valuable by leaving a broadly-based academic community. They would be working alongside similarly qualified junior research staff earning £200 or £300 more per annum (less income tax) and might be forgiven for feeling disgruntled. I think we could arrive at a fair figure which would equalise the "pull" of the university and the Institute, but clearly this is a delicate matter which could be the subject of much contention and we are treating it very gently. We have not yet discussed these problems seriously with D.S.I.R. or the universities.

Most of the foregoing has to do with research for a higher degree in subjects needing residence with us for most or all of the time. For research people the possibility of a higher qualification is an essential incentive, and the alternative of short term appointments to junior research posts would be a poor substitute. But there are, in addition, considerable opportunities for training over shorter periods, to supplement what the universities can do. We already take large numbers of undergraduate students during the long vacation and are willing to take more. We shall try to broaden this by encouraging universities to send post graduate students in physics and engineering for short periods.



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We have regular lectures, given by our own and university staff, which are attended by university staff and research students. The next step will be to encourage selected members of our staff to offer courses of lectures, at either undergraduate or postgraduate level, to universities who have already expressed interest in this possibility. University engineers have told us that they believe that this, together with time spent by their students in a laboratory like ours with major engineering projects, will greatly accelerate the acclimatisation of the graduates when they take posts in industry.

I need hardly add that we expect to benefit in our own work from closer collaboration with universities and from an increased flow of young people through the laboratory.

Yours sincerely,

T. G. Pickavance

c.c. Dr. J. A. V. Willis