

# TRAINING OF AN IAEA FELLOW

By Vladimir Mackerle

(Mr. Mackerle, a scientific worker at the Czechoslovak Academy of Sciences, was awarded an IAEA fellowship for training at the Saclay Centre for Nuclear Studies, France. At the end of his training he wrote this article describing some aspects of his experience that are likely to be of wider interest)

I was one of the first trainees to be granted an International Atomic Energy Agency fellowship, and now, after working in France for a year, I am in a position to sum up my impressions, ideas and reflections on the extent to which I have profited from my stay, and the opportunities these international exchanges offer to scientists who can benefit from them.

No one any longer dreams of denying that, where research is concerned, there is a need for close collaboration between research workers dealing with the same subject, and everyone believes in the usefulness of these exchanges of views amongst colleagues.

The value of a prolonged stay abroad, however, is, I think, much greater than that; for it enables trainees to study their problems more thoroughly, properly understand and digest them, and help in finding solutions by participating in the work themselves.

My experience leads me to believe that selected trainees must have three essential qualifications:

(a) A thorough knowledge of the language spoken in the host country, so that they can adjust themselves quickly to people and surroundings new to them. If they are to understand the problems set before them and how they should be approached, stated, and dealt with and, without wasting time, get used to new organization and new working methods, it must be easy for them to ask questions and discuss problems with their colleagues.

(b) A scientific education broad enough to bear on often radical changes of work. Trainees may, at the beginning of their training period, be assigned to work that is relatively simple, but perhaps very different from that to which they are accustomed, possibly even something they have never done before. They must know enough to be able to adapt themselves to do any useful work required of them.

(c) A bent for research, resulting from some years of experience. They may, naturally, begin by doing minor laboratory jobs, but, once the period of adaptation is over, they must leave that stage behind, try to see problems in perspective on a larger scale, and have enough initiative to be able to direct their efforts to the solution of a more important problem which they have decided to be worth tackling.

If trainees do not have these qualifications they risk being assigned for the whole training period to very circumscribed tasks which will not provide the training their stay should afford. For it is in the personal contribution that the value of the fellowship lies - its value both to the trainee himself and to the laboratory which opens its doors to him.

On my arrival at the laboratory, I worked first on minor radiochemistry problems while gradually familiarizing myself with the various French radioactive waste problems, all at present being studied at Saclay. Any time I asked, I was most willingly helped by my colleagues, who made it possible for me both to discuss matters with them and to extend my working contacts by putting me in touch with other laboratories which could supply useful data for what I wanted to do.

It was thus that the idea came to me of applying the results of my earlier studies and research in Czechoslovakia to the problem of wastes resulting from the treatment of radioactive effluents by injection and direct coagulation in the permeable strata of the sub-soil. This was not a small laboratory affair, but a comprehensive problem extending into many branches of science, including physical chemistry, radiochemistry, hydro-geology, hydro-dynamics and mathematics, and I had to get in touch with several experts.

I want to stress the fact that I was never refused - something that greatly encouraged me. The professors of Grenoble University were kind enough to give me their support; they considered my work might be offered for a doctorate, and allowed me to submit it to the University. Again, the Radiation Monitoring and Radioactive Engineering Service of the French Atomic Energy Commission also showed interest, and intends to make semi-industrial tests with the data I am assembling with a view to its practical application. I could not have done this without assistance - especially the mathematical solution of basic equations, done with electronic computers at Saclay by the Electronic Computation Section.

Thus I found everyone very understanding, and ready to place everything they had at my disposal. What I want to make clear is that there are many opportunities open, but it is for trainees to know how to take advantage of them and do work of general interest, so achieving the real purpose of their fellowships.