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ABSTRACT

Recommendations are made concerning the problems and good utilization of experts that are allocated to work in developing countries and laboratories that are initiating activities in new fields.

Problems of isolated scientists or research groups in developing countries are not necessarily the same for all developing countries.

In a country like mine, with an area corresponding to 8,000,000 squares kilometers, and with a political organization that comprises 23 states and 4 territories, some of those states larger than many european countries, the problems of scientific groups are rather different in a northern state, or one in center-south, or one in the south of the country.

However, there are a certain kind of problems that are common for practically all of isolated research groups. These are the problems in connection with good utilization of experts supported by international organizations such as the International Atomic Energy Agency.

Let us then consider something along the lines of experts help. Frequently, these experts are at the start or at the end of a professional career, meaning, they received their Ph.D. diplomas recently and are at the beginning of their scientific lives, or they are, sometimes, retired scientists but still active and militants in technological or scientific production.

Both cases may bring good results to the country they are supposed to give expertise help. The young Ph.D. will bring new blood and fresh ideas to the place and the older expert will bring a large amount of experience. But, also in both cases, some shortcomings may result if the expert and the international organization that supports him are not aware of the special ancillary conditions of the work in a country quite different from the expert place of work.

Let us make a parenthesis at this point. Please, do not misunderstand my comments as a deleterious criticism to any international organization that is having or have had action in developing countries. I am supposed to talk about the "problems" of isolated groups and not to hide or conceal those problems. If some criticism may be found in my words it is my intention that they are understood as of a constructive nature.

First of all let us consider the recently graduated Ph.D. Frequently, they are bright young fellows. And they want, some of them at least, to reform everything they find in the new country and the new place of work they have just arrived, forgetting that they are supposed to stay in that country for only one year or so. And sometimes what they want to change is not only on their specific field of work, what would be quite understandable. Not unfrequently some of them want to change the bureaucratic rules, the way and the schedule of maintenance of equipment and they are specially impatient with the delay in requests to buy pieces of

equipments or drugs required for a specific point of work. It is quite understandable this attitude. The expert goes to a place for a limited time, usually one year. And he keeps an eye on the calendar. But just the same he cannot change the pace of things. The wheels of the administrative machine are all interdependents and it is not possible to make just one of them to go faster than the others ones. The expert should be aware that many of the facilities he is used to have in his own country or place of work, are not available in the new place he is going to live and to work. He should be patient and try to adapt his own pace of working with the one of his new job. Otherwise only about 50% of his potential capability, if not less than that, are going to be put into actual work.

An expert who goes to a developing country must be conscious that he does so, not to continue his work and with the same facilities he is used to have. He is going to start a new laboratory, frequently from the very beginning. Obviously there is a difference in going to another research center to continue one's own specialized field of research — in which case the expert should have gone to a developed country and a developed laboratory — and to a center that is supposed to start activities in that new field. In a way, the last case is a situation of sacrifice, where the expert will not have, probably, the chance to publish two or three new papers during the year he is going to stay abroad. But, at the end of his staying, when he goes back to his own country, he will have the feeling of achievement by leaving a new group in condition of working on a new line of research. And that was the sole aim of his expertise work.

Even running a risk of becoming repetitious, I think I must insist that the idea is not to continue the expert own work in another environment, but to initiate people on new line of research, to help the setting up of new laboratories and to orient in the judicious choice of equipment for the laboratory.

Let us now look to the other extreme of age of experts, the case of the older expert. Usually he is a scientist or engineer with a great amount of experience and knowledge on his own field. He is specially useful in technological type of work where many big problems are solved by the knowledge of details concerning a piece of machinery or of a step of a complicated process. This expert has a respected name and quite a load of achievements. Consequently he requires a compatible treatment. It is not uncommon the case in which he does not like to abide by the rules of the house. If the general regulations of the institution requires, for instance, for safety reasons, that everybody punches a clock-card at the entrance by the beginning and by the end of a work day — and even the Director of my Institute does that — some of the experts will do it reluctantly, if he decides he should do it at all. If we put ourselves in his shoes we see that he may be right in being reluctant to punch a card. He never did that, previously, in his own place of work. But on the other hand, what is the trouble in punching the card? Since he is being paid by the international supporting institution nobody is going to discount, from his salary, the day he did not go to work. Let us be a good sportsman and, when in Rome, let us act as the Romans do. These are the people who are going to be his colleagues for about one or more years.

A more serious problem with the very experienced expert, is that, usually, he is an international citizen with a United Nations passport. But most of his technological or scientific experience was acquired in his own country and quite often by working in fields that might be considered classified. This is specially true in atomic energy and in technological work, when

the knowledge of the expert is to be put at use in industrial or pilot plants of the country he is supposed to help. During his work it is frequent the occurrence of situations in which the expert has to solve problems whose easiest solution is the one that he already knows. But to apply that solution is to disclose still classified work of his own country. Then he faces a very serious dilemma: he cannot be unfair to the host country and refuse to disclose his knowledge to the host country, since knowledge is the merchandise he is being paid to sell; on the other hand he cannot disclose that same knowledge, which is, still, an industrial secret on his own country. Really, I do not know how to solve such an impasse. But organizations such as the International Atomic Energy Agency should give a thought to situations like that. They are more common than one might think and I have been testimony to facts similar to the ones I mentioned, more than once in Brazil.

Next we come to the problems arising from the eventual needs of the expert concerning equipment to be imported. The expert should try to do his work with the equipment the institution already has.

Usually the budget for importation of material must be approved the fiscal year before the year the expert is supposed to start his work. Paper work required for importation of equipment is rather involved and an import permit is not granted before three to four months. Shipment of material and equipment cannot always be made by air, meaning that about three months more would be required for the expert to get the equipment. All these preliminaries take a total of seven to eight months, what is an appreciable fraction of a one year staying.

In order to try to circumvent all these shortcomings the involved institutions, supporting and receiving institutions, should approve the name of the expert with, at least, a six months time prior to the start of his activities in the country he is supposed to work. It is highly advisable that he changes letters with the people with whom is going to work, before moving to the new country. Then he would be able to plan his activities as function of available equipment and conditions of work. The expert supporting institution should strongly emphasize this point for prospective experts.

On another line of thought let us consider one of the various beneficial actions that institutions like the International Atomic Energy Agency has had in developing countries. These beneficial actions have been exercised through the various study group meetings. Specially useful were the study group meetings on utilization of research reactors held in various countries in South America. In São Paulo we have had two of these meetings, one on general applications of research reactors, in 1963, and another one on radioisotopes production using research reactors, in 1969. These meetings are not expensive and the number of young people starting their scientific activities that may attend the meetings is high, since travel expenses are low and sometimes nonexistent. The benefits that resulted from those meetings were excellent and many good ideas and good suggestions, concerning the best use of research reactors, were born in those study group meetings. The Agency should not stop this type of activities that have helped many new research groups to solve various kind of problems that, otherwise, would take months until a good solution would be found. These meetings have certainly reduced the number of problems of isolated scientists or research groups and the time to solve them.

If many of the problems a new scientific center has to face are already subsided in São

Paulo, this is not the case for research reactors centers at the very beginning of their activities. When we started the construction of the research reactor at the Instituto de Energia Atômica, 15 years ago, the scientific staff of the institution was composed of only 20 people, most of them recently graduated and with only a bachelor's degree and no previous experience in engineering that might help the construction and assembling of the reactor. Many of us had to do labor work, helping in setting up reactor control table, soldering, lining of pool tiles, installation of pipes for the water treatment system and so on.

After the assembling and engineering work to set up a research reactor is finished, it comes the time for the first tests of the machine, when experienced people are really required. This is a situation when many and unpredictable problems arise and when the experience of able experts is of incalculable value. Good orientation at the time of the first tests of a research reactor can avoid quite a good number of future headaches, will help in avoiding mistakes with a consequent substantial saving of money and expediting the time when the machine will be really put into actual work.

The first months, if not the first years, of a new research reactor center, are full of problems for isolated research groups and this is a time that institutions like the International Atomic Energy Agency, and the experts provided by the Agency, can really help along pragmatical lines.

Before closing my remarks I think we owe a word of praise and recognition to the international institutions that have done a wonderful job in most of latin american countries, but specially in Brazil. If today the importance of research is really understood and well supported by the government, much of this we owe to the pionner work of institution such as The Rockefeller Foundation, among other private enterprises. Twenty years ago the only way we had to send people abroad for training, was, practically, only through private international institutions. Only in very especial cases a government supported scientist was sent and maintained abroad for training. The influence of an institution such as the Rockefeller Foundation was not only on the line of subsidising fellowship in foreigners universities and places of training but, specially, to implant and to inculcate the germ of good example for governmental institutions.

As I said in the beginning of my speech I hope my remarks are not understood as criticism to nobody neither to institutions which have really done a wonderful job in helping developing countries that needed expertise. These institutions helped also, and this is the most important of all, in giving examples and preparing the ground in such a way that radical transformations have occurred in the philosophy of supporting research by the government in Brazil, specially after 1964. This has brought the most beneficial consequence and a definite comprehension of the importance of research to the progress and development of the country.

RESUMO

Apresentam-se algumas recomendações e conselhos relativamente ao bom aproveitamento de peritos destinados a desenvolver novos campos de trabalho em laboratórios de pesquisas de países em desenvolvimento.

RÉSUMÉ

On a fait quelque recommandations relatives au travail des experts pour le progrès de nouveaux travaux dans les pays en development.