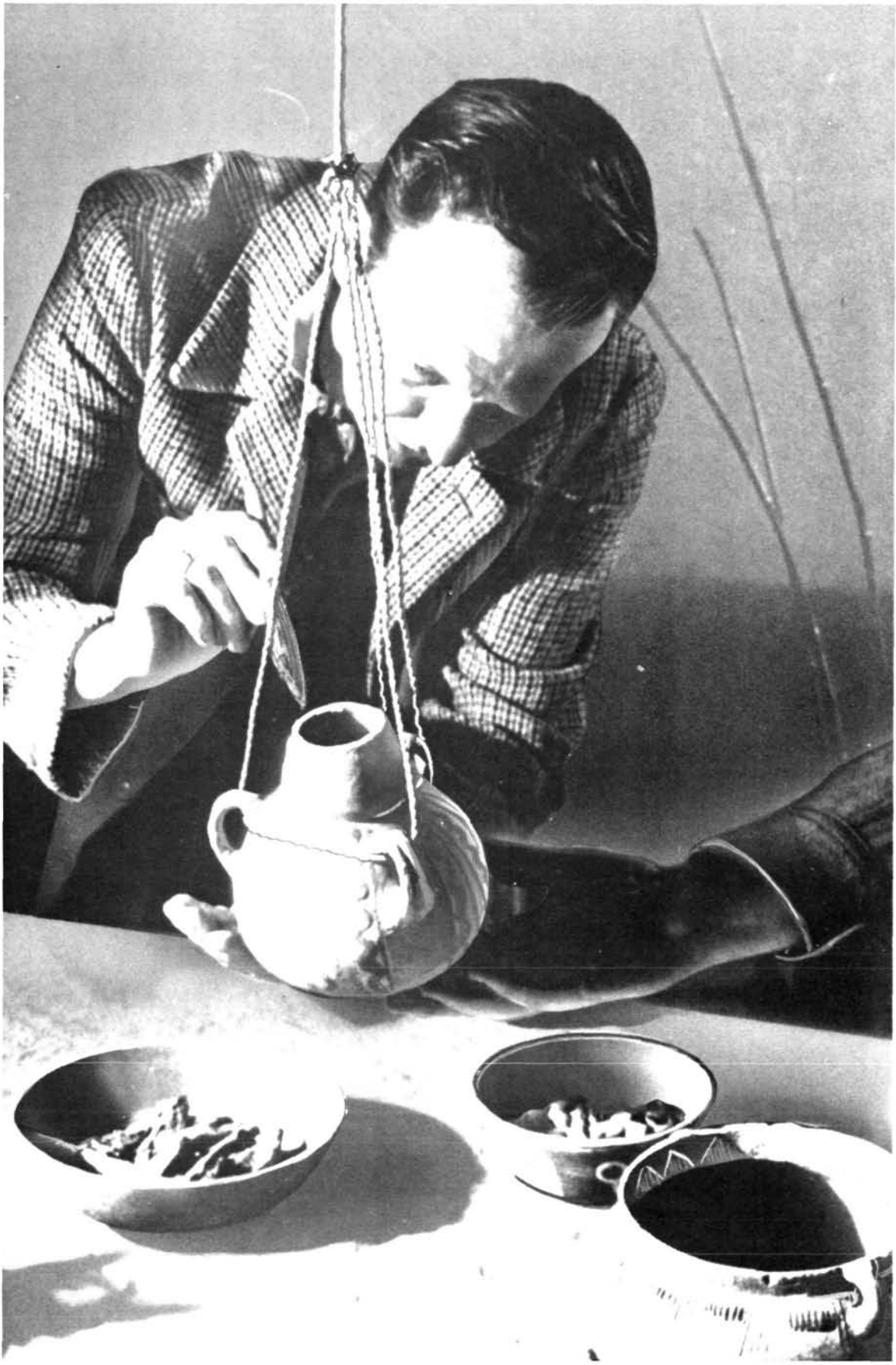
training for development

The Statute of the Agency charges it with the duty "to encourage the exchange and training of scientists and experts in the field of peaceful uses of atomic energy". One way in which it fulfils this function is by organizing training courses and study tours, particularly for the benefit of scientists and technicians from the developing countries.

Training courses, study tours, scientific visits and visiting seminars form a considerable part of the regional and inter-regional projects financed under both the regular programme of the Agency and the technical assistance funds of the UN Development Programme. The Agency recognises that the effectiveness of any such project depends to a very great extent on the specific needs, opportunities and resources for development of the developing countries which take part in it; and the Agency tries to take these factors into account when it is planning such a project and when it is carrying it out.

The study tour programme began in 1966, when a party of scientists and technicians visited Czechoslovakia, France, the USSR and the UK to study the use of radioisotopes in industry. Since then six others have been held, three of them in 1970, and as this issue of the Bulletin went to press a seventh group was visiting the USSR, France, the UK, the Federal Republic of Germany and Czechoslovakia to study methods in the standardization of radiation dosimetry. The number taking part in this latest tour — 30 — is the largest ever. The eighth study tour, on the uses of isotopes and radiation in agricultural research, is to be held in August.

Such work cannot be considered in isolation; each part impinges on every other. As a direct result of the sixth study tour, during which participants from countries in Latin America, Asia and the Far East visited the US and Canada for a six-week intensive study of the industrial applications of radioisotopes and radiation technology, the Agency is organizing a training course on non-destructive testing techniques using gamma radiography, to be held in Singapore; and a second, on uses of radio-tracer techniques in industry and in environmental pollution studies is being organized in co-operation with the US Atomic Energy Commission, to be held in Raleigh, North Carolina, later this year.



In addition, two of the participants in that tour were later considered for assignment as experts under another part of the Agency's technical assistance programme, to serve in other countries in their region.

Putting theory into practice

Each year a growing number of people take part in "package tours" and consider — rightly — that they are having a holiday. In a sense, there is a similarity between such a package tour and a study tour arranged by the Agency: in each case a group of people is brought together by the tour operator, and is kept together through a series of flights, bus trips, overnight stays in hotels and the like. But the similarity ends there. The participants in a study tour are there to work.

The study tour in the US and Canada illustrates the point. The tour proper began on 10 August when the participants went to the headquarters of the US AEC at Germantown, Maryland, for a briefing; and ended on 18 September in California. On virtually each working day between those dates the participants visited two nuclear research centres or industrial installations, throughout the US and in Canada. They could thus obtain first-hand impressions of products or processes which they could adapt to the needs of their home countries — such as the production of wood-plastic and concrete-polymer composite materials, the sterilization of medical goods, food irradiation and the production, packing and shipping of radioisotopes.

The final report of one participant, picked at random, notes that "it will be very difficult for us to ask our industry, which is usually rather small scale industry compared with that of the USA, to follow what we have seen during the tour". But he goes on to list eight separate possible follow-up actions which he was contemplating:

— strengthen radioisotope production in his own country, to upgrade its quality;

— expand the local activation analysis service programme to assist quality control in industry;

— encourage a local electronics company to co-operate with the national nuclear research institute in making various kinds of nuclear gauge;

— begin use of the X-ray fluorescence analysis technique;

— hold seminars for management-level officers in various industries to demonstrate to them the convenience and possible economy of use of radioisotopes in industry;

— encourage applied research in nuclear science and technology;

— report to his local atomic energy authority and submit proposals for new developments; and

— strengthen on-the-job training programmes in the industrial application of radioisotopes.

That participant came from the Far East; a second, from Latin America, reacted to the tour in almost exactly the same way. He, he said, would try to develop contacts with local industry and to explore their technical needs which might be met by use of nuclear techniques, providing some

Reconstructing the past: neutron activation analysis may be used to determine the place of origin of ancient pieces such as this pre-Columbian pot. This technique was among the applications of activation analysis studied by participants in the tour of the USA and Canada when they visited the Lawrence Radiation Laboratory, Berkeley, California. Photo: Lawrence Radiation Laboratory

with equipment to demonstrate the advantages and benefits of this technology. He proposed also training workers in industry to enable them to conceive solutions to technical problems, using nuclear techniques, "and know that radiation is safe when it is well used". A third participant, from India, reported that "the knowledge gained by the visits, and discussions held and contacts established with the members and experts of various institutions would be of great help". He noted, in particular, that considerable research has been undertaken in India in the study of fibre-plastic composites and wood-plastic composites, and in the use of radiation in the sterilization of medical products. A facility to process large quantities of wood-plastic "combinates" for product evaluation studies and process development was being built; there was a great demand for disposable sterilized products in India, and plans were underway to build a demonstration facility with assistance from the UN Development Programme.

In a sense, the report of that participant was typical. None of the party came to the tour "raw", with no background of previous experience. Rather, they took this as an opportunity to learn more about the latest techniques — new products or processes — and improved methods of using what they had already available in their home countries.

Participants in the study tour of the USA and Canada at the headquarters of the USAEC, Germantown, Maryland,
with USAEC and IAEA officials associated with the tour. Photo: USAEC

"Benefits of the tour which are directly applicable in Indonesia," wrote the participant from that country, "are improvements of present activities undertaken. To mention a few examples: neutron activation analysis using Ge-Li detector for better resolution in water logging and penstock water discharge measurements for several hydro-power stations; improvement of isotope production mainly in quality control, packing and sealed sources, and some industrial processes."

Broadly, the tour achieved its purpose. It, and others like it, could possibly have been improved. One participant pointed out that "(nuclear) techniques are only some of the ways man develops in order to solve his living problem as a member of the human community," and went on the suggest that information about the non-nuclear solution to certain problems in addition to what they were shown on the tour "would allow us to better appreciate the advantages and disadvantages of the nuclear solutions and eventually to avoid the risk of using nuclear techniques as 'snob' solutions to problems which could be solved otherwise".

In the end, perhaps the best conclusion was expressed by the participant who wrote: "We could not decide that our study tour was a successful one or not, because in my opinion it only depends on our future efforts after return to our own countries." Those words express what is at the heart of this part of the Technical Assistance Programme: encouragement and training to enable developing countries to help themselves.