with which all questions were answered, and of the generous hospitality that was offered at all times.

A more detailed report of the tour will be issued by the Agency in due course.

RADIOTHERAPY - MUCH EQUIPMENT, FEW SCIENTISTS

One of the problems resulting from advances in medical treatment using radioactive sources is that much equipment has been developed and bought by hospitals before they have the trained staff necessary to handle it. Aspects of this question have been examined by a panel of experts brought together in Latin America by the Agency.

It has for some time been recognized in scientific circles that in many parts of the world, the development of physics in radiotherapy - particularly from the point of view of personnel - has not kept pace with that of practical radiotherapy itself. There is an extreme shortage, even complete absence in some cases, of qualified medical radiation physicists at the same time as there exist large numbers of radiotherapy departments, both public and private, which are equipped with expensive telecobalt and X-ray units.

Because of the need for serious consideration of this situation, a panel meeting on "dosimetric Requirements of Radiotherapy Centres" organized by the Agency was held at the Venezuelan Institute for Scientific Research in April. Participants were from Argentina, Brazil, Chile, Colombia, Ecuador, Peru, Venezuela, Canada, the Federal Republic of Germany, UK and USA, and there were three representatives from WHO.

Status reports on the existing situation in the countries represented were followed by discussions of some of the scientific aspects, especially problems of dose calibration and instrumentation. The information examined, although specifically related to Latin America, was felt to be applicable also in other areas. It revealed that:

- there are countries without any legal regulations with regard to the use of radiation sources in radiotherapy;

- in many major cities the existence of large numbers of separate small radiotherapy centres creates a situation detrimental to the performance and development of high-grade therapy;
- there is a need for at least 50 radiotherapy physicists in the countries represented;
- most radiotherapy centres do not have posts for a physicist;
- national or regional dose-calibration services do not exist;
- dosimeters are in use, the calibration of which has, in some cases, not been checked for 10 years or more.

It was generally recognized that the physicist has much to contribute to the whole subject of radiotherapy. At the technical level not only will adequate physics services lead directly to improvements in radiotherapy but will also enable the therapist to devote his attention more properly to medical aspects. However, at the present time, the most pressing need is for services in the basic technical and dosimetric aspects. Clearly it is impossible to carry out even rudimetary radiotherapy unless the apparatus is in good working order, and its radiation output or doserate, is accurately known at all times for all conditions of use.

As a result of the discussions, proposals were made aimed at relieving the present unsatisfactory situation. The problem was considered in three distinct, though interrelated parts. For this purpose three sub-groups were formed with the task of discussing:

(a) the preparation of a basic manual of dosimetry in radiotherapy;
(b) the organization of regional demonstration courses in radiotherapy physics;
(c) the creation of regional dosimetry facilities.

Existing reports and publications on dosimetry in radiotherapy are without exception written for the use of the trained professional medical physicist. Since it is unlikely that significant numbers of such physicists will become available in the foreseeable future in Latin America, the provision of a basic manual is desirable. It was recommended that the Agency should convene a meeting of consultants to prepare the manual, dealing with such subjects as procedures for checking the working conditions of X-ray and telecobalt units; specifications of dosimeters, their care and maintenance; details of techniques for determining absorbed dose; etc.

The proposed demonstration course, it was felt, should be geared to professional staff with university education who are especially interested in the subject and also have definite opportunities for working in this field. In view of the dissimilar background of the possible participants the programme should be organized as a complete unit, with no previous knowledge of radiological physics being required. The length of the course should be at least four months - one month's theoretical training and two to three months' practical training in hospitals. It should be given annually in one of the major Latin American cities, utilizing local facilities and physicists as organizers and lecturers.

The complete absence of national laboratories for standardizing radiation measurements and the lack of physics departments in most radiotherapy centres in Latin America warrant the setting up of one or more regional dosimetry facilities, the functions of which would be primarily to calibrate dosimeters; to provide local technical assistance by means of trained staff; to check radiation equipment and dosimeters; to arrange a dose-intercomparison service; and to co-operate with local personnel dosimetry services. To be most effective, this activity should be in the charge of local personnel, with some initial assistance in the form of equipment and experts provided by the Agency.

Although the recommendations were presented to the IAEA as the organization responsible for the setting up of the panel, the participants recommended that the co-operation of the World Health Organization and the Pan-American Health Organization should be invited. It was also suggested that the panel report be circulated to public health authorities in the countries represented.

MESSENGERS FROM OUTER SPACE

Although no evidence has yet been confirmed of living beings reaching the earth from space, it has been estimated that hundreds of tons of solid matter arrive every day in the form of meteorites or cosmic dust particles. Much is destroyed by heat in the atmosphere but fragments recovered can give valuable information about what has been happening in the universe for billions of years. Some of the results of worldwide research on meteorites were given at a symposium in Vienna during August.

During six days of discussions a total of 73 scientific papers was presented and a special meeting was held for the purpose of improving international co-operation in the research. More than 150 scientists drawn from 20 countries and six international organizations took part. The event was organized by the Agency in co-operation with UNESCO, the Joint Commission on Applied Radioactivity, the International Astronomical Union, the International Union of Geological Sciences, the International Association of Geochemistry and Cosmochemistry and the Meteoritical Society.