

Not the least of Professor Costa Ribeiro's many qualities were a great personal charm and a high idealism of purpose. His devotion to the aims and activities of the Agency sprang from a deep faith in the value of international co-operation in promoting the peaceful uses of atomic energy throughout the world. He voiced his conviction even in his last public utterance - in his opening address as General Chairman of the Third Inter-American Symposium on Peaceful Uses of Atomic Energy - extracts from which are reproduced below:

"One of the most important factors for accelerating the generalized use of atomic energy for peaceful purposes is certainly the development of international co-operation.

"An excellent example of the validity of this assertion is the amount of services already delivered to many countries all over the world through the successful operation of the International Atomic Energy Agency, during its first three years of existence.

"The first step to accelerate the industrial production of nuclear power is for each country to study very carefully and seriously its own specific conditions and its own specific needs in order to be able to formulate objectively its own problems and to establish on a concrete basis its own national atomic programs, and this should be done not by a mere duplication of what has been already done but by the intelligent utilization of the experience of other countries and by

increasing such experiences with the results of its own studies and of its own experiences.

"In this domain International Organizations and the specialized agencies of the United Nations are in an exceptionally good position to help each individual country through the exchange of scientific and technical information, the sending of experts, the training of specialized personnel and the access to special materials and equipment.

"Other not less important aspects of this international co-operation are: the training of an increasing number of specialists, the readaptation of university curricula, the granting of fellowships, the exchange of visiting professors and experts, the installation in the different countries of research reactors with its complementary laboratories and the efficient utilization of such installations for the study of the specific problems above referred to.

"It is absolutely necessary for each nation, with the assistance of its brother-nations, and of the international organizations which already exist, to increase substantially its human potential in scientists and engineers, capable of studying the specific conditions of each area for the establishment of nuclear power, of finding the most economic and convenient solution in each case, and of developing the multiple applications of the by-products of atomic energy, i. e. the radioisotopes and its radiations, to medicine, public health, agriculture, biological, chemical and other scientific research, and to the various possible industrial activities."

NEW PUBLICATIONS

The latest publications of the International Atomic Energy Agency include the proceedings of three important scientific meetings held by the Agency: the Conference in Warsaw in September 1959 on the application of large radiation sources in industry, and especially to chemical processes; the Conference in Monaco in November 1959 on the disposal of radioactive wastes; and the Symposium in Vienna in October 1959 on the metrology of radionuclides.

The publication on the use of large radiation sources in industry* is the first of two volumes of the proceedings of the Warsaw conference which was held to facilitate an international exchange of information and views on this subject of growing importance. In a foreword to the publication, the Agency's Director General, Mr. Sterling Cole, states: "Uses of radiation in industry are among the most effective

ways in which atomic energy can help economic development. The benefits to industry, which are already substantial, have so far been mostly derived from the application of radioisotopes and other small sources of radiation as tools of scientific investigation, detection, measurement or control. The use of radiation as a direct agent in initiating industrial processes, which has now become possible with the availability of large radiation sources, will perhaps result in ever greater and wider development".

Work in this new field of research and development has already been undertaken in some countries and a beginning is being made in others. The Conference in Warsaw was the first international meeting at which the whole subject was reviewed in detail. About 200 prominent scientists from many countries and representing many disciplines but with common interests in this field listened to and discussed more than 60 contributions.

The papers presented, as well as records of the discussions, are being published by the Agency

* *Large Radiation Sources in Industry, Vol. I.* 480 pages. Price US \$4.50; 27 s. stg.; Sch. 94.50.

in the hope that they will be an important source of information to a much wider community of scientists and representatives of industrial and technical groups. The papers included in the first volume, along with summaries of discussions, have been arranged under the following headings: I Large Radiation Sources and Methods of Use, II Cobalt-60 and Other Radiation Facilities, III The Use of Fission Fragments Recoil Energy for Chemical Processing, IV Radiation Effects on Plastics and Elastomers, and V Radiation Initiation of Polymerization and Grafting.

The papers have been reproduced in the language of their presentation, with summaries in all the four working languages of the Agency, viz. English, French, Russian and Spanish.

Disposal of Radioactive Wastes

The Scientific Conference on the disposal of radioactive wastes was organized jointly by IAEA and UNESCO, with the co-operation of FAO, and held at the well-known Oceanographic Museum in Monaco from 16 to 21 November 1959. It was attended by 283 scientists, representing 31 countries and 11 international organizations. The importance of the subjects discussed was reflected in the keen and widespread interest that the discussions evoked in scientific and other circles concerned. It has long been recognized that the problem of safe disposal of the increasing amounts of radioactive wastes produced in atomic operations in different parts of the world is one of great complexity and considerable urgency. A satisfactory solution can emerge only from a comprehensive examination of its scientific and technical aspects, and from close international co-operation in the formulation of effective but safe practices and in the establishment of appropriate machinery for the observance of these practices. The Conference in Monaco provided the first opportunity for a full international exchange of views and experience on all aspects of the subject.

The extensive scope of the discussions is reflected in the list of 40 papers included in the first volume and 41 included in the second volume of the Conference proceedings recently published by the Agency.* The papers, along with short summaries of the discussions based on them, are grouped as follows: Volume I: A. Nature of Radioactive Wastes, B. Treatment and Processing of Radioactive Wastes - Disposal into the Atmosphere, Temporary Storage, Handling and Transportation of Wastes, C. Treatment and Processing of Radioactive Wastes - Treatment of Liquid Effluent, D. Present Methods of Waste Disposal, and E. Administrative and General Considerations in Waste Disposal. Volume II: F. Biological Aspects of Radioactive Waste Disposal into the Sea, G. Physical and Chemical Aspects of Radioactive Waste Disposal into the Sea, H. Panel Discussion on Advantages and Disadvantages of

Radioactive Waste Disposal into the Sea, I. Panel Discussion on Oceanographic and Fisheries Research Required for Safe Radioactive Waste Disposal, J. General Considerations on Radioactive Waste Disposal to the Ground, and K. Panel Discussion on Advantages and Disadvantages of Radioactive Waste Disposal into Geological Structures.

The papers are reproduced in the language of their presentation, with abstracts in English, French, Russian and Spanish.

Radioactivity Measurements

Metrology of radionuclides, on which the Agency held a symposium in Vienna in October last year, is the science of precise measurements of the absolute value of the activity of radioactive sources. In almost all applications of radioisotopes it is important to know the precise quantity of the radioactive substance employed, and to know this, it is essential to determine the activity of the substance. Intensive research has been going on in many countries to remove the uncertainties involved in the present methods of measurement, and more than 100 scientists from 27 countries attended the Vienna symposium to compare the results of their research and discuss the problems encountered.

Thirty-seven papers were presented by scientists from 14 countries, all of which are now reproduced in a single volume.* They cover both the routine methods of standardization of radionuclides and new developments in absolute measuring methods. The papers and summary records of the discussions are presented in the following order: I General Survey Papers on the Routine Methods of Standardization of Radionuclides, II New Developments of Absolute Measuring Methods for the Standardization of Radionuclides, III Neutron Source Calibration, IV High Intensity Source Measurements, V Microcalorimetric Methods of Standardization, VI Photomultipliers, and VII Application of Absolute Measurement Methods to Various Problems.

Review Series

Three new publications have appeared in the Agency's "Review Series" which comprises articles written by experts from Member States reviewing recent developments in some major field of the peaceful applications of atomic energy and other scientific and technical material. The first review in this series dealt with the survey and evaluation of radioactive deposits. The recent additions are:

"Dosage: Préparation de molécules marquées et applications biologiques" (Tritium: Dosage, Preparation of Labelled Molecules and Biological Applications), by Walter G. Verly (Belgium). 56 pages. In French, with summaries in English, French, Russian and Spanish. Consists of four chapters,

* *Disposal of Radioactive Wastes, Vol. I.* 612 pages. Price US \$6; 36 s. stg.; Sch. 126. *Vol. II.* 584 pages. Price US \$3; 36 s. stg.; Sch. 126.

* *Metrology of Radionuclides.* 472 pages. Price US \$5; 30 s. stg.; Sch. 105.

beginning with a survey of tritium counting and followed by an account of methods used in tritium labelling, tritium applications and safety aspects. Based on a selection of recently published literature and the author's own experience in the field.

"Equipement électronique pour l'industrie nucléaire française" (Electronic Equipment Used in the Nuclear Energy Industry in France), by P. Desneiges, M. Doireau, L. Koch and T. Weill (all from France), 59 pages. In French, but with an introduction and the table of contents also in English, French, Russian and Spanish. Contains a review of nuclear electronics in applications which have developed through the advance of nuclear energy and briefly describes or enumerates electronic instruments used in the physical, medical, biological and other aspects of the atomic energy industry pertaining to reactors and their utilization, fuel processing, ore refining and prospecting.

"Recent Research on Controlled Thermonuclear Fusion". 80 pages. Contains the following three review articles: I 'Recent Developments in Controlled Thermonuclear Fusion Research at the University of California'. By C. M. Van Atta (USA). Briefly describes the research carried on since 1952; presents the basic principles of magnetic mirror confinement of plasma and, among other things, discusses compression heating of a plasma and schemes for injection into magnetic mirror fields. II 'Controlled Thermonuclear Research at Princeton University'. By Robert G. Mills (USA). A brief history of the

origin and growth of Project Matterhorn and a discussion of the results of theoretical and experimental studies. III 'Plasma Accumulation by High-Energy Injection: The DCX Experiment'. By Arthur H. Snell (USA). An account of the current observations and accomplishments of the DCX experiment at the Oak Ridge National Laboratory, in which the establishment of a plasma of high-energy protons is being sought by the injection of 600 keV deuterium ions into a magnetic mirror arrangement. The articles are in English with summaries in English, French, Russian and Spanish.

Each of these three publications in the Review Series is priced at US \$1; 6s. stg.; Sch. 21.

Two other recent Agency publications are:

"Use of Radioisotopes and Supervoltage Radiation in Radioteletherapy". Contains the report of a study group convened by IAEA and WHO in Vienna, 3 - 5 August 1959, and the background information prepared for this group. Available in English, French, Russian and Spanish. 88 pages. Price US \$1.50; 9s. stg.; Sch. 31.50.

"Application of High Energy Radiations in Therapy". This is the first issue of a non-periodical series of information material, the "Bibliographical Series". Each issue will contain a bibliography covering a particular aspect of the peaceful utilization of nuclear energy. Language: English. 86 pages. Price US \$1; 6s. stg.; Sch. 21.