

# COMPUTER AID FOR INFORMATION AND MEDICINE

Recent meetings in Vienna have emphasized ways in which use of computers can assist work connected with nuclear techniques. Links have now been established to provide a world-wide service of information to reactor designers and physicists, and indications have been given of ways of using computers to ease the task of treating cancer patients.

## EXCHANGING NEUTRON DATA

Basic neutron data are becoming available in massive quantities — one experiment alone might provide thousands of items of information — and the means of making them available must become more sophisticated to enable fullest use to be made of them.

Links between computerized neutron data compilation centres in Western Europe, USSR, USA and at the Agency headquarters in Vienna have been initiated to enable the information essential for reactor designers and theoretical or experimental physicists to be available throughout the world.

Co-operation is progressing in accordance with recommendations made by an International Nuclear Data Committee. During August details were discussed by representatives of the four centres which share the responsibility of collecting and disseminating information. The broad scheme is as follows:

The Brookhaven National Laboratory Sigma Centre services USA and Canada.

The Neutron Data Compilation Centre of the European Nuclear Energy Agency (ENEA) at Saclay, France, services countries in Western Europe and Japan.

The Nuclear Data Centre in Obninsk services the USSR.

The IAEA Nuclear Data Unit in Vienna services all other countries in Eastern Europe, Asia, Africa, South and Central America, as well as Australia and New Zealand.

All four centres have agreed to exchange information with each of the others.

Producers of data, whether by experiment or evaluation, are urged to submit their results to, or make requests from, their appropriate centre. Data submissions and exchanges utilize the media of printed listings, punched cards or magnetic tape, and graphical plots of such information are available.

## NEEDS FOR CANCER TREATMENT

Reports presented at a panel of experts organized by the Agency in Vienna showed that the continuously growing number of cancer cases throughout the world calls for greater use of computers in conjunction with the treatment of the disease by nuclear radiation.

An important part of a radiation treatment plan is the measurement of the amount of radiation delivered to the tumour itself and the surrounding tissues. The many factors involved, including the great variety of tissues, positions of radiation sources, types of radiation used, etc., may give a physicist days of work. Rapid and accurate calculations by computer, which can handle a large amount of information in a matter of minutes, can reduce the difficulties caused by the complexity of the calculations involved and the increase in numbers of cancer patients.

Computers can also be used to keep records of patients and treatment plans. Many radiotherapy centres have already adopted the method, and computerized storage and retrieval of records have aided considerably the task of following up cases and making statistical analyses.

The experts foresaw the time when setting up and carrying out radiation treatment could be automated with the use of computers, reducing time and minimizing the possibility of human error.

To promote the methods and to encourage international collaboration, it was recommended that the Agency serve as a clearing house for world-wide exchange of radiation data for medical use; that existing training courses for hospital physicists include instruction in computer applications; and that developing countries, where cancer cases may soon reach the same level as in developed countries (2000 to 3000 cases per million of population every year), be assisted in their efforts to benefit from computer applications in radiological treatment.