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 dis­
cussed 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.