

## XII. Symposium II. Analysis and Reduction of Dynamic Data Using R.I. Tracer

### Analysis and Reduction of Dynamic Data Using R.I. Tracers

#### 1. Introductory Review

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In-vivo counting methods in dynamic studies using radioisotopes are reviewed, and several problems are pointed out in the radiation detectors and their data-taking equipments. It is expected in the near future

that an on-line computer would be employed for the acquisition of immense amount of data from highly sophisticated apparatuses, such as scintillation camera and autofluoroscope.

#### 2) Brain

#### Dynamic Study of Human Brain Characteristics with Radioisotopes

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In General, the absolute counting of total organ isotope contents has been attempted by external counting with collimated gamma detector at the organ comparing with that of a phantom organ containing a known amount of the same isotope present in the real organ. Though the human brain fills upper half of the head and is conveniently located well away from other organ, some unwanted isotope in adjacent and overlying tissues such as scalp, skull and dura are seen and the changing counting efficiency at various depth of tissue and at varying distances from the detector introduce significant errors difficult to correct.

We have introduced a detection system for human brain consists of two large crystals bilaterally arranged about 5 cm lateral to the head with their long axes paralleling the brain hemispheres. Also a flat lead plate is introduced between the patient's head and each crystal to flatten the field of efficiency and to partially absorb superficially originating gamma radiation. Since any parenchymatous organ such as brain and kidney can be divided into two compartment, circulation tissue (blood) and non-circulating tissue (brain tissue), two examples of information of dynamic study using radioisotopes are presented below.