Response curves obtained from the computer when RPF value is set to Oml/min, i.e. when kidneys are asumed to excrete no radioisotope, give a good agreement with actually measured background (RISA radioactivity) curves on both right and left sides.

From these obsevations it may be concluded as follows: it is possible to analyze background in Renogram by the analog computer, and thereby calculate separately the factors related to renal function and those which are not; thus to a certain extent quantitative interpretation of RI-Renogram is made possible by using the analog computer.

VIII. Whole Body Counting

An Interim Report on the Standardization of the Renogram Equipment

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There are many factors that influence on the radio-isotope renogram. The ability of the measuring equipments is one of the most important factors among them. The method how to standardize the mesuring equipment was investigated by using phantoms or by clinical applications.

1) The larger the size of NaI crystal, the more advantageous in sensitivity. The crystal of 2″ × 2″ is about five times as sensitive as that of 1″ × 1″ in the similar geometric conditions.

2) The thickness of the lead shield should be enough to reduce the counts of peak gamma-ray of iodine-131 from outside of the visual field to less than one percent of these from the visual field.

3) The whole kidney should be included within the complete visual field of the collimator, while any part of the opposite kidney and the bladder should be outside of the incomplete visual field.

4) The time constant of a ratemeter is desireble to be within the range of 1—5 sec, with the chart speed of 5—10 mm/min.

Fundamental Studies on the Whole Body Counter (Report 1)

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A high-dose-level whole body counter has been used for the determination of the RI retention in the patient's body in our hospital. The detector installed in the celling has a 3″ × 2″ NaI crystal and a rectangular lead collimator. Patients are counted from both sides (supine and prone positions) and the RI retentions are measured by the geometric means of two-directional counts with the differential settings. By this method of counting, however, the counting rates vary with the change of RI distribution in the patient's body even when the RI is not excreted. For example, the patient with oral administra-