for two 3 inch diameter NaI crystals are as followes:

Maximum sample demension: $15 \times 15 \times 15$ cm^3.

Measuring γ-rays energy range: from 10 KeV to 3 Mev.

Back-ground rates: 80 cpm using a 24% ^{60}Co windor, 145 cpm using a 35% ^{131}I window, and approximately 1300 cpm in the integral mode.

counting efficiency for a space of 18 cm between two detector, using 0.5 L RI sample in 2 L beaker: 1.5% using 24% ^{60}Co window, 19% using 35% ^{131}I window.

Minimum detectable activity (4σ of B.G): 1.9 $\mu\mu$Ci/cc using 24% ^{60}Co window, 0.2 $\mu\mu$Ci/cc using 35% ^{131}I window.

The possible uses of this instruments in medicine are discussed.

As a conclusion, reproducible measurements are thus assured without need for time-consuming dilution or concentration of the samples to a standard volume, and therefore the universal γ countor is to be used to a γ counting problem in medicine.

On the Improvement of Scintigram Photorecorder

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1. General.

Although the scintiscanners being used in these days have been improved in the sensitivity, spacial resolution and the display system, it may be said that the comparatively long time required for scanning is one of the drawbacks remained for improvement. The speeding up of scanning may be a most easy way to shorten the time but there occur a few problems, that is, the higher sensitivity of detector system and the quick response of display system without scalloppings become major factors required for present case.

For the purpose of eliminating the scalloppings of scintigram even in high speed scanning, a contrast controlling device for photorecording is designed and the experimental results are reported.

2. Principle.

When the contrast enhancement of scintigram is made by using a rate meter circuit, scalloppings can not be avoided. Therefore, it is necessary to use the technique based entirely on other principle. In the improved device, such a system is used that the flash duration of light source is controled by the time intervals of successive two pulses which are reversely proportional to the average input counting rate. The principle of operation is as follows.

The time interval between the successive two pulses is converted to a voltage which is proportional to that time interval. The voltage so controls the speed of discharge of a capacitor having been charged to a fixed potential that the higher the voltage, becomes faster the speed of discharge. The time required for the potential to reach a determined value becomes the flash duration of light source. The voltage which controls the speed of discharge can also be varied by an external control so that the degrees of contrast enhancement may be determined manually. The rate-down ratios of ninety-nine steps from 1/1 to 1/99 are employed for more fine selection of recording factor than previous one.

3. Results.

The relations between the input count rate and the corresponding film density are measured. The comparisons are made for the degrees of scalloppings of scintigrams obtained by the former and the improved device. The scallopping of about 5 mm is measured in the scintigram obtained by the former device for scanning speed of 40 cm/min. and about 8 mm for 1.0 m/min. scanning speed. On the contrary, little scalloppings are measured in the scintigram obtained by the improved device for the both scanning speeds.