6. $E_\beta = 0.0794$ Mev (6).

7. $\Gamma = 0.31$ (6).

8. $\bar{g} = 36.4$ (7). Length of cylinder 15 cm, radius 3 cm. Making the substitutions, we have

$$D_{\beta+\gamma} = \frac{700 \times 0.5}{300} \times 2.7\ (73.8 \times 0.0794 + 0.0346 \times 0.31 \times 36.4)$$

$$D = 1.15 \times 2.7 \times 6.24$$

$$D = 19.4 \text{ rads.}$$

One may, of course, interpret the biological data in a different manner. For example, 65% of an administered dose is eliminated in 24 hr (2). One might assign an elimination half-time of 3.4 hr which would account for more than 99% of this fraction. Substituting these values for C and T_{eff}, the formula becomes

$$D = \frac{700 \times 0.65}{300} \times \frac{3.4}{24} \times 6.24$$

$$D = 1.51 \times 0.143 \times 6.24$$

$$D = 1.34 \text{ rads.}$$

Ten percent of an administered dose is retained in the kidneys with a biological half-time of 28 days (2,3). Since the physical half-time cannot be exceeded, we can make the following substitution:

$$D = \frac{700 \times 0.10}{300} \times 2.7 \times 6.24$$

$$D = 0.23 \times 2.7 \times 6.24$$

$$D = 3.87 \text{ rads.}$$

Using whole-body counting, Sodee (3) found the effective half-life of ^{197}Hg-chlormerodrin to be 0.23 days. To account for the entire administered dose, one could make the following substitutions for the remaining fraction:

$$D = \frac{700 \times 0.25}{300} \times 0.23 \times 6.24$$

$$D = 0.575 \times 0.23 \times 6.24$$

$$D = 0.825 \text{ rad.}$$

Adding the three components we have

$$D = 1.34 + 3.87 + 0.825$$

$$D = 6.035 \text{ rads.}$$

There is yet one other important biological fact to be considered. It has been shown that the radiation dose to the kidneys may be reduced three fold by the administration of 1 ml nonradioactive mercurial diuretic 2–24 hr prior to the radioactive dose (2). Thus one might be giving only 2.012 rads to the kidneys of a standard (?) adult of 70 kg weight with normal kidneys when subjecting him to a brain scan with ^{197}Hg-chlormerodrin.

Hopefully, we can look to the reports of the work of the Medical Internal Radiation Dose Committee of the Society of Nuclear Medicine to lead us from this chaotic tangle of ignorance. But however sophisticated their methods and however refined their equipment, the results will only be as good as the biological data.

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DEFINITION OF NUCLEAR MEDICINE

The editorial in the December, 1967, issue of the *Journal* requested comments on a proposed definition of nuclear medicine. I would like to offer the following operational definition of nuclear medicine:

Nuclear medicine is the scientific and clinical discipline in which free radionuclides or radionuclide compounds, redistributed *in vivo* or *in vitro* by physical or chemical mechanisms, are used for diagnostic, therapeutic or investigative purposes.

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