

MEMORIAL HOSPITAL

INCORPORATED 1884

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AFFILIATED WITH
CORNELL UNIVERSITY
MEDICAL COLLEGE
DOUGLAS RESEARCH
LABORATORIES
HUNTINGTON FUND FOR
CANCER RESEARCH
GEORGE F. HOLMES
SUPERINTENDENT

CORNELIUS P. RHOADS, M.D.
DIRECTOR

August 9, 1940

Dr. P.C. Aebersold
Radiation Laboratory
University of California
Berkeley, California

Dear Aebersold:

I still owe you many thanks for your last letter of February 28, which contained much useful information.

As you already know, we are doing some work with P³² both on patients and animals using a counter and a Lauritsen electroscope. I have a chamber ready to attach to an FP-54 system but I haven't been able to install it yet. Could you send me a drawing of your chamber with special reference to the screen wall grid? What set of resistors do you use for your ranges? Are the S.S. White resistors good enough up to 10¹² ohms?

In order to avoid the pains of the establishment of a microcurie standard, I have tied up our figures with the ones you use. I have found, however, that your values from time to time are consistent if we take 14.3 days half life instead of 14.8. The latest figure of Livingood and Leaborg in Rev. Mod. Phys. Jan. 1940 is exactly this. What do you know about this subject?

I have developed some formulae in connection with dosage and I would like to know whether they check with yours.

The first concerns the dose to be given for a given number of roentgens assuming only radioactive decay

$$I = \frac{975 r}{KV \times T}$$

I = dose in mcs per gram of tissue
r = dose in roentgens

KV = average energy of the β particles in KV
T = half life in seconds

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The other is a direct derivation of it and concerns the dosage rate

$$r/\text{second} = \frac{\text{curies} / \text{grams} \times \text{KV}}{1.41}$$

I have taken up to now $\overline{\text{KV}}$ for $\text{P}^{32} = 700 \text{ KV}$. A planimetric average of Paxton's spectrum (P.R. Feb. 1, 1937, Vol. 51) gives me 560 KV. Since you have the original figures you must have a more accurate average. Will you send it to me? I hope that I am not causing too much trouble.

Could you estimate the amount of 8 days iodine that could be obtained with a R_n -Be source under optimum conditions? Some of the doctors think that it could be enough to use experimentally on patients but I think that the effort would not warrant the results.

There is some work here going on with dyes which seem to linger on tumors; they carry radicals of Sulphur, Bromine, Iodine, Chlorine, Fluorine, and Lithium, Sodium and Potassium. Can the activation of these elements be obtained in quantities comparable with P^{32} ?

I trust that I can in some way return on occasion the favors that you are doing for me.

With kindest regards from all I am

Sincerely yours,



L. Marinelli

LM:KR

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