(3) 1500 mg.cm.$^{-2}$ beryllium + 150 mg.cm.$^{-2}$ lead combined filter, to detect electromagnetic radiation of greater than about 200 kev energy, but not that of less than about 200 kev energy, and,

(4) 5 g.cm.$^{-2}$ lead filter, to present detection of all but energetic gamma radiation.

The difference in intensity observed under condition (2) and (3), the "differential count", was a measure of the low energy electromagnetic radiation (probably x-rays).

In rare-earth activities obtained in the thermal neutron irradiation of uranium or plutonium the activity measured by a "differential count" is only a few tenths percent of the activity measured through 7 mg.cm.$^{-2}$ aluminum. The activity observed in the rare-earth fractions of deuteron bombarded Pu^{239} often gave a "differential count" as high as one percent of the total. In general, this increased to 5 - 10 percent in the americium fractions resulting from the fluosilicate cycles.

Two half-life periods, 12 hour and 50 hour, were observed in the decay of the total activity and the activity measured by the "differential count" (Figures 10 and 11). Only the 50 hour period was found in the decay measured with a 5 g.cm.$^{-2}$ lead filter(Figure 12). At several times during the decay of the observed activities, absorption data were taken in order to identify and characterize the radiations due to each activity. Measurements of the electromagnetic radiations were made with a 1500 mg.cm.$^{-2}$ beryllium filter, to eliminate the beta or electron activity. Examples of the data, for the 50-hour activity are shown in Figures 13 to 15 (taken after complete decay of the 12 hour activity), and for the 12 hour activity, in Figures 16 to 18 (after subtraction of the radiations due to the 50-hour activity).

< Figs. 10 and 11
< Fig. 12
< Figs. 13, 14, 15
< Figs. 16, 17, 18