the similar measurements for 17 Mev and 6.1 Mev γ-rays (this bulletin, **22** (1950), 18).

The source of γ-rays used was $CoCl_3$ of about 2 mC, which was enclosed in a small glass tube. As a radiation detector we used an end-window type G-M counter with a lead plate 1.2 mm thick placed before the window. The distance between the γ-ray source and the counter was about 80 cm, and the distance between an absorber and the counter was about 30 cm. A set of the canalizing lead slit and plug was placed upon the counter. Then the difference between the counts with the lead plug and that without for each absorber was taken to be the true counts due to the γ-rays, which passed through both absorber and canal.

By these procedures we obtained the absorption coefficients (cm^{-1}) for twelve elements as follows:

$_{12}Mg$, 0.099_4; $_{13}Al$, 0.14_3; $_{26}Fe$, 0.40_8; $_{28}Ni$, 0.48_8; $_{29}Cu$, 0.46_4; $_{30}Zn$, 0.36_6; $_{48}Cd$, 0.43_8; $_{50}Sn$, 0.36_2; $_{51}Sb$, 0.33_5; $_{80}Hg$, 0.74_9; $_{82}Pb$, 0.64_3; $_{83}Bi$, 0.56_6.

Further meafurements for other elements and the analysis of the expetimental data obtained are now in progress.

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6. On the Scintillation Counter

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The scintillation counter has been used for measuring γ-ray energy and intensity.

For this purpose, transparent NaI (Tl) and anthracene crystals were made in our laboratory by slow cooling method. The scintillations excited by individual γ-ray quanta in the crystal was detected by the photo-multiplier (RCA 931A). The output of photo-multiplier was amplified about 500 times, and pulse hight distribution was observed by the set of discriminator and scaler. Several microcuries of $Co^{60}Cl_3$ were put in front of the NaI (Tl) crystal (about $1\times1\times1$ cm^3). We found relatively sharp four lines in the differential pulse hight distribution curve. The sharpness of these lines was affected by the intensity of radioactive source, the thickness of the crystal, the collimation of γ-rays, and many other factors, but the position of these lines was not altered. Comparing these lines with the pair line (2.6 Mev) of Th-C'', γ-rays, it is concluded that these lines correspond to two compton lines and two photo-electric lines for two γ-ray components (1.13 Mev and 1.17 Mev).

But when the anthracene crystal was used, these lines were much broadened. This was caused probably by poor fluorescent characteristics of anthracene.

To avoid fluctuation in the counting, high voltage supply for the photo-multiplier was stabilized to about 0.01% and the amplifier gain was stabilized as far as possible.
