1.5 mg/cm^2, G-M counter. A close approximation to the number of active carbon atoms that would have been present had none decayed is then obtained by extrapolating the activity back to half bombardment time and dividing by the decay constant λ. The error in this procedure is less than one percent for a five minute bombardment of a 20.5 minute half-life material. Before each run, the plateau level of the G-M counter was checked with a uranium standard. The level was found to fluctuate as much as four percent from one week to the next, even though the slope was only one percent per 100 volts. The dead time of the counter was measured to be 110 μ seconds, by counting two samples together and separately assuming $n_{true} = n_{obs}(1 + n_{obs}\tau)$. The final data for the 105 Mev points were all taken with the same counter.

To find the order of magnitude of the proton-proton scattering cross section, a rough calibration of the G-M counter efficiency was made. The best way to evaluate the effective solid angle, self- absorption, backscattering and other factors is to measure a known source. It is necessary to use a source with the same properties as the one for which the G-M counter is to be calibrated. To do this, the absolute activity of C^{11} in polyethylene foil was measured with scintillation counters, using the method of β-γ coincidence counting. In this method the efficiencies of the scintillation counters do not enter the final expression for the absolute activity.

Thus,

The number of β counts $N_\beta = N_o \epsilon_\beta$,

The number of γ counts $N_\gamma = N_o \epsilon_\gamma$,