those used at the cyclotron. Knowing the neutrons to be monoenergetic at 2.5 Mev, these D-D runs were important not only to test the apparatus as a whole and the analysis of the data, but also as a calibration for the translation of pulse size into energy of the recoil. We shall afterwards report the essential runs singly, taken both with D-D and fission neutrons, and discuss them separately.

Method of analysis.

First, however, we shall describe the method of analysis upon which our final conclusions are based. Although, as discussed in Sections 1 and 2, proper care was taken to avoid excessive wall effects, corrections had to be made for them; for the highest energies observed in the fission spectrum these corrections amounted to as much as 50%, for the lowest about 15%. The wall corrections were based upon careful calculations of Hammermesh and Weinstock, the former using a numerical, the latter, as an independent test, an entirely different analytical method. The only simplifying assumption in these calculations was that of perfect coaxial collimation of all neutrons, passing the chamber; due to the finite extension and distance of the alloy disk, the neutrons emerging from it actually entered the chamber with an average deviation from coaxiality of 14 degrees. Both the smallness of this angle and an empirical test for collimation made with D-D neutrons make us feel confident that the error introduced by the simplification is negligible. A conservative estimate of the percentage error of the wall corrections is 10% of which several percent is due to the inaccurate knowledge of the ranges. The calculations were carried out for the geometry of our chamber and a gas of a stopping power equal to that of 39 atm. of H_2.

The result of these calculations and the form in which they have been used can be stated as follows: Consider a mono-energetic neutron