

THEORETICAL PHYSICS GROUP

Mr. Ibsen prepared two tables: one on the cross section of individual isotopes for thermal neutrons, one on the radioactivities, obtainable by (γ - n) reaction, the life time of which is longer than one day.

Mr. Stephenson wrote two reports in collaboration with E. P. Wigner: one on the probable absorption cross section of Cd as function of the energy of neutrons, the other on the multiplication constant of homogeneous mixtures. Unfortunately, in the latter case, the old too high absorption cross section was assumed for D₂O and D₂ so that the corresponding results are incorrect. According to recent measurements of the experimental section, the absorption cross section of D₂O is even lower than our figures were in the case of D₂C so that the corresponding multiplication constant is higher than in that case. The calculation will be repeated as soon as the final cross sections are available.

Continuous γ -ray Spectrum in α Decay - S. M. Dancoff

A calculation has been made of the probability, during the α decay of a heavy nucleus, for the emission of γ radiation through bremsstrahlung in the field of the emitting nucleus. The calculation is provisional in that the Coulomb barrier of the nucleus is replaced by a "square" barrier, the constants of which are appropriately chosen. The probability for the α particle to lose most of its energy through radiation proves to be small and of the order of $(3 \times 10^{-6}) \times$ energy of the particle in million electron volts. The probability for the emission of a low energy quantum is larger. For example, a 5 Mev α particle has