B. Helium ion Bombardment of Np^{237}.

Samples of Np^{237} were prepared and bombardments were carried out in a manner analogous to the methods of Section IV-A for deuteron bombardments of Pu^{239}. The activated samples were chemically processed in the same way and fractions similar to those in the previous part were obtained. Analysis of the radiations from americium samples resulted in decay and absorption data which provided ample evidence for the presence of 12-hour and 50-hour activities with the same nuclear properties as before. The possible products of the helium ion bombardment of Np^{237} are just those expected in the deuteron bombardment of Pu^{239}, since the same compound nucleus is formed in each case.

In comparable bombardments, the relative yield of the 12-hour isotope compared to the 50-hour isotope was somewhat higher for the case of helium ions on Np^{237}. The kinetic energy of the helium ions was reduced from 38 Mev to 32 Mev in one case with a consequent change in relative yield. These results and the corresponding results from the Pu^{239} - deuteron experiments are discussed in Section IV-D.

C. Helium ion Bombardment of Pu^{239}.

In the helium ion bombardment of Pu^{239} (5) the particle and electromagnetic radiations of the 50-hour activity could be observed in the combined americium-curium fraction and in the americium fraction after separation of the americium and curium by means of their selective elution from a resin (Dowex 50) adsorption column with ammonium citrate solution. The 12-hour activity may well have been present initially but the time involved in this separation was so long that none remained after the separation. The formation of the 50-hour activity may have been due to any or all of the following mechanisms: