

confirmatory experiments were completed by February 15, 1950. For convenience of expression the name berkelium, symbol Bk, will be employed in the following discussion. The reasons for suggesting this name will be made clear at the end of the paper.

## EXPERIMENTAL METHODS

### Extraction of Americium

The Am<sup>241</sup> used as target material for the production of element 97 was separated from strongly neutron-irradiated plutonium into which it grew as the daughter of the beta-particle decay of ~10-yr. Pu<sup>241</sup>. The isotope Pu<sup>241</sup> is produced<sup>6</sup> by the reactions Pu<sup>239</sup>(n,γ)Pu<sup>240</sup>(n,γ)Pu<sup>241</sup>. The americium was separated and purified by combinations of precipitation and ion exchange methods.

### Preparation and Bombardment of Targets

The americium targets were prepared for bombardment in the Crocker Laboratory 60-inch cyclotron by the evaporation of americium nitrate solutions in small platinum dishes of ~0.5-cm<sup>2</sup> area followed by ignition to form black americium oxide. The americium used was of ~96 percent chemical purity as determined by spectrographic analysis. The major impurities were sodium (~1.5 percent), zinc (~1 percent), calcium (0.2 percent), aluminum (0.5 percent) and titanium (0.2 percent). These targets were placed inside a special target assembly, indicated schematically in Fig. 1, which was designed to prevent alpha-radioactivity from entering the cyclotron and to eliminate its spread to the surroundings during transportation. In this assembly the particle beam from the cyclotron was passed through two thin duralumin foils (each 1.5 mil in thickness) before entering the evacuated compartment containing the sample, and the compartment was isolated from the surroundings. The beam was also passed through a thin platinum foil placed directly in contact with and over the target dish. The