observed to decay with a half-life of 4.6 ± 0.2 hours through a decay factor of more than 100. Furthermore, it was observed in examining berkelium fractions from separate bombardments that the ratio of the numbers of alpha-particles corresponding to the three different energy groups of the 4.6-hour activity remained constant regardless of the energy of the helium ions used for bombardment.

The radiations associated with the electron-capture decay were characterized in a qualitative manner by differential absorption in beryllium and lead absorbers using the xenon-filled Geiger counter previously mentioned. Present were electromagnetic quanta of energy 10 to 20 kev and harder electromagnetic quanta of energy greater than about 70 kev, some of which were probably K x-rays. No attempt was made to measure more energetic gamma-rays. Present also were conversion electrons of maximum energy of about 0.5 Mev, and the number of these electrons appeared to be about 5 percent of the total number of disintegrations based on the assumptions as to counting yield given in the previous section.

The half-life for the decay of the new berkelium isotope was also determined by observing the variation of its counting rate with time both in the windowless counter and in the xenon-filled Geiger counter. In the latter case three determinations, each with different absorbers placed between the sample and the counter window, were made. The absorbers used were 6.9 mg/cm^2 aluminum, 1.46 g/cm^2 beryllium and 1.46 g/cm^2 beryllium together with 93 mg/cm^2 lead above the beryllium, respectively. In all cases the counting rate was followed through a decay factor varying between 100 and 1000 giving a value for the half-life of 4.6 ± 0.2 hours.

The energies of the L x-rays associated with the decay of the new isotope were determined as mentioned previously. The data are best shown by reference to the typical pulse analysis curve of Fig. 6.