

The chemical properties of elements 93 and 94 were studied by the tracer method at the University of California for the next year and a half. These first two transuranium elements were referred to by our group simply as "element 93" and "element 94" until the spring of 1942, at which time the first detailed reports concerning these elements were written (3, 4, 5). In order to write the report (4) on the chemical properties, it became necessary to have chemical symbols for the two elements. It was remembered that McMillan had suggested the name "neptunium" (symbol Np) for element 93 after Neptune, the planet immediately beyond Uranus, which gives its name to uranium, and, therefore, it was thought proper that element 94 should assume the name "plutonium" (symbol Pu) after the next planet Pluto. These names and symbols have been adopted officially by the International Union of Chemistry and will be used here.

The isotope of plutonium which is of major importance is the one with mass number 239. The search for this isotope, as a decay product of  $\text{Np}^{239}$ , was going on almost simultaneously, and these experiments were being carried on by the same group with the added collaboration of Dr. E. Segrè. The isotope  $\text{Pu}^{239}$  was identified and its possibilities as a nuclear energy source were established during the spring of 1941 (6) using a sample prepared by the decay of cyclotron produced  $\text{Np}^{239}$  and later purified by taking advantage of the then known chemistry of plutonium.

Once the value of the isotope  $\text{Pu}^{239}$  was thus established, the paramount problem was that of producing it on a large scale and isolating it after production. The production problem was solved through the