INTRODUCTION

On September 10, 1967, a group of scientists held a reunion to celebrate the 25th anniversary of an important scientific event, and to be present when the room where the event took place was designated as a National Historic Landmark.

The event, which took place on September 10, 1942, was the first weighing of plutonium. The room where it took place was Room 405 Jones Laboratory at the University of Chicago, one tiny room of the wartime Metallurgical Laboratory of the Manhattan Project.

Two previous experiments had proved that plutonium-239 was even more fissionable than uranium-235, and thus it appeared possible that either of these isotopes might serve as the basic ingredient for a nuclear weapon. These crucial experiments were conducted on March 28 and May 18, 1941, in Berkeley. The mission of the Met Lab was to develop (1) a method for the production of plutonium in quantity and (2) a method for its chemical separation on a large scale.

The key to the solving of the first problem was the demonstration by Enrico Fermi and his colleagues of the first sustained nuclear chain reaction on December 2, 1942.

Important to the solution of the second problem was the determination of the chemical properties of plutonium, an element so new that little was known concerning these characteristics. This work was done with the extremely limited quantities available, and this first weighing of a 2.77-microgram example was a key step in this crucial aspect of the project.

The solution of these two critical problems led to the construction of the large plutonium production reactors and chemical separation plants in Hanford, Washington, and to the success of a program that culminated with the detonation of a plutonium weapon over Nagasaki that brought World War II to an end.

Plutonium still serves as a major ingredient of nuclear weapons, but perhaps more significant today is its peaceful potential as the fuel for the "breeder" type nuclear power reactor. Nuclear power stations using the breeder reactors now under development may someday be our main source of electricity, capable of supplying most of the world's growing power needs for centuries to come.

The following text, transcribed from the remarks of those scientists who gathered at the University of Chicago on September 10, 1967, to celebrate the 25th anniversary of the first weighing of plutonium, tells an important part of the story of this fascinating new element that is destined to play an increasingly significant role in the future of man.