microgram amounts, or what the material was, but this didn't seem to deter their willingness to accept. Paul Kirk introduced me to Burris Cunningham. I asked him if he would come to Chicago. He accepted and was in town by the end of the month. He told me as soon as he arrived that he had a fine student, Louie Werner, whom he would like to invite and I was, of course, delighted. Louie Werner came along in a few weeks.

These, then, are the people who began the task of isolating plutonium from large amounts of uranium. We had a little cyclotron-produced sample, prepared by Art Wahl, that we brought from Berkeley. It had a microgram or so in it, mixed with several milligrams of rare earths. Using that sample the ultramicrochemists, Cunningham, Cefola, and Werner isolated the first visible amount—about a microgram—of pure plutonium. I guess it was a fluoride or perhaps a hydroxide. It was not weighed, but it could be seen! We were all very excited when we saw this first man-made element on August 18, 1942.

In the meantime, hundreds of pounds of uranium were being bombarded with neutrons produced by the cyclotron at Washington University, under the leadership of Alex Langsdorf, and at the 60-inch cyclotron at Berkeley, under the leadership of Joe Hamilton. This highly radioactive material was then shipped to Chicago. Art Jaffey, Truman Kohman, and Isadore Perlman led a team of chemists who put this material through the ether extraction process and the oxidation and reduction cycles to bring it down to a few milligrams of rare earths, containing perhaps a hundred micrograms of plutonium, and this was turned over to Cunningham, Werner, and Cefola. These men prepared the first sample in pure form by going through the plutonium iodate and the hydroxide, etc., on to the oxide.

This 2.77-microgram sample was weighed on September 10, 1942. The first aim was to weigh it with a so-called Emich balance, which was somewhat complicated and had electromagnetic compensation features. As it turned out, due to the heavy load in the shops, this weighing balance would have taken perhaps 6 months to build.

Cunningham then had the idea of just a simple device consisting of a quartz fiber, about 12 centimeters long and 1/10 of a millimeter in diameter, suspended at one end, with a weighing pan hung on the other end. Then the depression of that end of the fiber with the pan containing the sample would relate to the weight of the sample that was weighed. Cunningham then measured the depression of the quartz fiber with a microscope. He invented this balance himself, although he found out later that an Italian named Salvioni had invented it earlier, and so it became known as the Salvioni balance.