placing the target element on the opposite side of the target from the beam and catching the recoiling atoms on a catcher foil (Slide 3). Some co-workers had already done this in a few previous experiments, I believe, at the 184-inch cyclotron. This was then applied for the first time to the identification of a new element in this manner. And the identification was made as shown here in a schematic manner (Slide 4) in a Russian publication, called "Priroda" (I believe that means "Nature"), that appeared shortly after the announcement in The Physical Review of the discovery of element 101. In this case, the helium ions, labeled 1, struck the target, gold and einsteinium-253 on the backside of the gold foil, labeled 2, and then No. 3, the gold catcher foil, was symbolically dissolved in the crucible shown as No. 4. The transmutation products were then put through a Dowex-50 ion exchange column, actually at high temperature (87°C), and eluted with an alpha-hydroxyisobutyrate solution, and then symbolically detected, as shown here in an ionization chamber to measure, in this case, spontaneous fission.

Next we see the famous picture of the recording of their data, with the handwriting of Ghiorso and Harvey made during the all night experiment when the discovery was made (Slide 5). As work went on it appeared that there was a spontaneous fission activity that was involved in a kind of complicated double decay, the mendelevium-256 actually decaying by electron capture with the half-life indicated at that time to be a little under an hour, now known to be 76 minutes, to a spontaneous fission activity, fermium-256, decaying with a half-life of 2.6 hours. The mendelevium was isolated, in the manner that I indicated on the previous slide, by the ion exchange adsorption elution technique. Then, in the definitive experiment, the spontaneous fissions were recorded in this manner during the night of February 19, 1955. The first one