While these efforts were underway, an extremely important analysis was undertaken by Norris and his associates. They reviewed the two sets of measurements, made six months apart and reported by Schlundt et al. (1933), on the Elgin State Hospital patients, and two sets made by Argonne personnel 233 and 258 months after the original measurement. They also acquired from various sources sealed radium ampoules that had been obtained in the 1930s from H.M. Armstrong of the Radium Extension Service of Chicago, the source of the radium used at Elgin and by many Chicago area physicians; the radium had been produced by the U.S. Radium Corporation. These ampoules were found in 1953 to contain 10 μCi of radium, within a few percent, and no more than 0.05% of mesothorium.

Norris et al. (1955) found that the retention of radium in the cases under review could best be described by a power function of the form $R_t = 0.54\ t^{-0.52}$, where R_t is the fractional retention at time t (in days) for times greater than one day. By differentiation, the fraction of the injected dose excreted per day is found to be $-dR_t/dt = 0.28\ t^{-1.52}$; dividing this expression by the retention expression yields the coefficient of elimination (the fraction of the total body radium excreted per day), which is equal to $0.52\ t^{-1}$.

Thus, from the Elgin cases, Norris and his colleagues derived a retention function thought to be applicable to any radium case in which the radium was acquired over a period that was short compared to the retention time. The retention function was unique, for it had been customary to think of retention as being described by an exponential function rather than a power function as found here. To be sure, the retention of radium in humans might be described better by a series of exponential terms, but the determination of the coefficients of the various terms would require a large number of very precise measurements of very similar cases. The power function is probably the best fit to such a series of terms, is easy to use, and has been found to describe the observed retention quite adequately.

Thus, the Elgin patients, with known injection levels, played a major role in the early understanding of the metabolism of radium in the human body. Unfortunately, the data are slightly suspect and thus subject to some uncertainty. Schlundt et al. (1933) stated that their patients received no radium in the six months between their first and second measurements. However, whether they received additional radium after the Schlundt measurements is uncertain.

This uncertainty arises because of the previously mentioned Dr. Findley John. In the 1933 paper, Schlundt credited John and a Dr. A.J. Carlson with providing the initiative for the radium injections. This statement fits with the