charged than would be expected from the behavior of its neighbors. In the elution with ammonium thiocyanate, in which this effect is most marked, berkelium also appears to be more strongly retained by the anion resin than might be expected from the behavior of curium and element 99. While the anomaly in the elution sequences is here attributed to californium, it must be remembered that a study of the properties of elements 101, 102 and 103 may later establish that there occurs, in the elements heavier than californium, a "reversal" in elution order with ammonium thiocyanate (in which element 99 would be "anomalous" in diverging from this reversed order). Thus if it should be established that the availability of 5f orbitals is important to the formation of complex ions in the heaviest actinides, the complex ions may decrease in strength at the end of the series due to the unavailability of 5f orbitals, leading to the elution of elements like 103 and 102 early in the sequence.

The first effect, the "reversal" of americium and curium, was reported earlier by Diamond, Street and Seaborg[19] in studies of the elution sequence of these, and other, elements from Dowex 50 resin with various concentrations of hydrochloric acid. The concept of bond hybridization, utilizing the 5f orbitals, was used to explain the greater extent of chloride complex formation in the actinide elements as compared with the lanthanides. The "reversal" of americium and curium was interpreted as due to the greater tendency of americium to utilize 5f orbitals in the formation of chloride complexes. The shrinkage of the 5f orbitals in the neighborhood of curium makes them less available for bond hybridization. In the elements beyond curium, the progressive decrease in the ionic