

radii might make the 5f orbitals again more available for bond hybridization, so that at least some of the following heavier actinide elements might again form complex ions more stable than those of curium. The smaller ionic radii would themselves increase the tendency of the heavier actinides to form complex ions.

It is more difficult to account for the reversal in elution positions in the neighborhood of californium, which is particularly evident in elutions from anion resin columns. It might, however, be useful to list some of the factors which could influence the elution position of an ion.

(1) The Ionic Radius. Small ions will be more tightly bound to cation resins, but will also be more liable to formation of complex ions.

(2) Degree of hydration. Small ions will have larger hydration shells, and will therefore be more sensitive to the influence of "dehydrating" eluant media such as strong solutions of hydrochloric acid. The importance of this phenomenon was shown by Diamond et al.,<sup>19</sup> in the elution of radium, barium and strontium from Dowex 50 resin with strong hydrochloric acid.

(3) Bond hybridization. The importance of this phenomenon was mentioned above. A comparison of the behavior of the lanthanide and actinide elements will be illuminating in this context, since it seems probable that f orbital hybridization will be a much more important phenomenon in the actinide series than in the lanthanide. It is also possible that hybridization involving 7p orbitals might begin to occur toward the end of the actinide series.