as will be described in a few minutes.

Unfortunately, there is not sufficient time to say as much as I would like about the interesting chemical properties of the transuranium group of elements. As I have already mentioned, the chemical evidence indicates that it is the tripositive oxidation state which is important here and points to a beginning with actinium of an "actinide" transition series in the same sense that the rare earth "lanthanide" series begins with lanthanum (29, 30). There is, however, the important difference that the first elements in the heavy series exhibit the property of oxidation to higher states with much greater ease than is the case for the corresponding elements in the rare earth series. The most important criterion for this classification is the probable presence of seven 5f electrons (analogous to the stable gadolinium structure) in tripositive curium (element 96) rather than the presence of the first 5f electron in thorium. In fact, there might not be any such electrons in thorium with, for example, their first appearance in protactinium (two 5f electrons) or in uranium (three 5f electrons). An important aspect of these considerations is the fact that the 5f and 6d shells of the elements in this heaviest region lie so close together that the energy necessary for the shift from one shell to the other is in some cases within the range of chemical binding energies.

The earliest element in this series which clearly exhibits the characteristic oxidation state of (III) is uranium, the third element in the series. In going up the series from uranium, each of the successive elements exhibits a more stable (III) oxidation state than the preceding element. When the elements americium (atomic number 95) and curium