hydrogen chloride gas proved to be the best practical conditions and produced half-widths (as defined in section 2) of 17%. Increased flow rates had the effect of increasing the half-widths; however, a rate of 20 seconds per drop provided satisfactory group separation when speed was necessary. The group separation of the actinides from the lanthanides was improved by maintenance of maximum hydrochloric acid concentrations, but was satisfactory when the concentration was in the range of 11.5 M to 12.5 M.

4. Dowex 1 Anion Resin - Hydrochloric Acid Eluant. In some early work[14] involving rapid separations of Cf^{246} and Cm^{242} from uranium, it was found that californium is delayed relative to curium in elution from columns of Dowex 1 anion resin when 13 M hydrochloric acid is used as the eluant. Further application of the method has shown that negatively charged chloride complex ions can be produced with all of the actinide elements ranging from americium through element 100. In 13 M hydrochloric acid solutions the existence of complex ions was barely detectable in americium and curium since these elements were only slightly adsorbed on anion resin as shown by very slightly delayed elution from anion resin columns. The apparent strength of the complex increases with increasing atomic number and the difference between the elements in certain cases is large enough so that the method is, in such cases, a practical and useful means of separation.

The elution positions of the elements ranging from Z = 95 through 100 are shown in Fig. 6b. (As in Fig. 6a, the peaks have been adjusted to similar heights by division of the height of some of the peaks by an